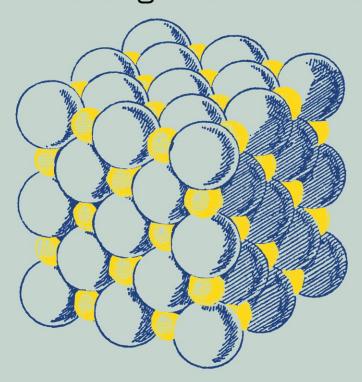
#### Structural Classification of Minerals

Volume 3:

Minerals with  $A_pB_q ... E_xF_y ... nAq.$ general chemical formulas
and organic minerals



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#### Structural Classification of Minerals Volume 3

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Volume 11B

#### Structural Classification of Minerals

Volume 3: Minerals with  $A_pB_q...E_xF_y...nAq$ . General Chemical Formulas and Organic Minerals

by

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Cover illustration: Packing drawing of a possible binary compound AB (Barlow, 1898, Fig. 8, p. 453); today known to correspond to halite, NaCl
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The more men are learned, the more they have loaded their minds with acquired knowledge, the less they are fit to examine from a critical standpoint the bottom of the thoughts which have shaped their conception of things. It is in this sense that it has been rightly stated that it is what we know that prevents us from finding out what we do not know.

Maurice de Broglie<sup>a</sup>

<sup>&</sup>lt;sup>a</sup> In Les Premiers Congrés de Physique Solvay (Albín Michel edit., 1951, p. 10)

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structure types	113		

#### Complementary information

It will be seen that we have adopted in this volume the same method of study as was used in the preceding volumes.

In the systematic tables, the first reference is normally the one to which the crystal data corresponds. Whenever a space group is followed by omission points (...) it is meant that other space groups are also possible. Some new symbols are used in the tables, namely c/h to indicate a certain combination of c and h closest stackings; S. means a crystallographic system, and s.g. denotes a space group. A crystallographic system is placed within curved brackets whenever it is different from the system to which the *Mineral Reference Manual* ascribes the mineral. An

example is Lindackerite (Tic.), a mineral that the above-mentioned book refers to as Monoclinic.

The book *Encyclopedia of Mineral Names* is also abbreviated as Enc.Min.Nam. The designation of defect derivatives should be applied only to mineral structures with small numbers of missing atoms, such as Pyrrhotite-4C  $(Fe_{7},\square)^{o}[S]_{8}^{h}$  or Laihumite  $(Fe_{0.8}^{+2},Fe_{0.8}^{+3},\square_{0.4})^{o}Si^{t}[O]_{4}^{c}$ . Dzhalindite  $In^{o}[\square(OH)_{3}]^{c}$  is better called a subtraction derivative of Perovskite  $Ti^{o}[CaO_{3}]^{c}$ .

When a chemical element is replaced by two elements in a disordered way the resultant mineral structure should be called a disordered derivative. An example is Polhemusite (Zn,Hg)<sup>t</sup>[S]<sup>c</sup>, a disordered derivative of Sphalerite Zn<sup>t</sup>[S]<sup>c</sup>.

Systematic tables

#### A<sub>m</sub>B<sub>n</sub>.nAq.

NAME	CHEMICAL	STRUCTURAL	SPACE	UNIT CELL DIMENSIONS	ENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
AKDALAITE	(Al <sub>2</sub> O <sub>3</sub> ) <sub>4</sub> .H <sub>2</sub> O	Al <sub>8</sub> [O <sub>12</sub> (H <sub>2</sub> O)] <sup>n</sup>	Hex. P6 <sub>1</sub> 22	a=12.87Å Z c=14.97Å	Z=18			Am.Min.,1971, <u>56</u> ,635(Abs.); Pov.,281-282;RRW,7;Hölzel, 84.
ANTARCTICITE	CaCl <sub>2</sub> .6H <sub>2</sub> O	Ca <sup>°</sup> [(H <sub>2</sub> O) <sub>6</sub> Cl <sub>2</sub> ]	Trig. P321	a=7.907Å Z c=3.95Å	Z=1			Enc.Min.Nam.,19;Am.Min., 1969, <u>54</u> ,1018-1025;Str.Tab., 159;Höizel,50;Pov.639.
ANTHONYITE	Cu(OH,Cl) <sub>2</sub> .3H <sub>2</sub> O		Mon.	? β=1	β=112°38'			Am.Min.,1963,48,614-619; RRW,27-28;Pov.,325;Str.Tab., 165;Höizel,53.
BARIANDITE	V <sub>5</sub> O <sub>12</sub> .6H <sub>2</sub> O		Mon. Cc	a=11.7A β= b=3.65A Z c=29.06Å	β=101°30' Z=4			Am.Min.,1990, <u>75</u> ,508-521; Bull.Min.,1971, <u>94</u> ,49-54; Am. Min.,1972, <u>57</u> ,1555(Abs.); RRW,50.
BISCHOFITE	MgCl <sub>2</sub> .6H <sub>2</sub> O	Mg <sup>[sc8]</sup> [(H <sub>2</sub> O) <sub>6</sub> Cl <sub>2</sub> ]	Mon. C2/m	a=9.90Å b=7.15Å Z c=6.10Å	β=93°42' Z=2			RRW,72;LF,306;Pov.,639-640; Str.Tab.,159;SB, <u>3</u> ,124-125, 489-491;Hölzel,50.
CALUMETITE	Cu(OH,Cl) <sub>2</sub> .2H <sub>2</sub> O		c	~				RRW,104;Str.Tab.,165;Pov., 325;Hölzel,53;Am.Min.,1963, 48,614-619.
CHLORALUMINI- TE	AICI <sub>3</sub> .6H <sub>2</sub> O	Al <sup>o</sup> [Cl <sub>3</sub> (H <sub>2</sub> O) <sub>6</sub> ]	Trig. R 3c	a=11.82Å a c=11.82Å o Z=6	a <sub>R</sub> =7.87Å α=97° Z <sub>R</sub> =2			RRW,125-126;Pov.,638;Str. Tab.,159; Hölzel,50.
ERIOCHALCITE	CuCl <sub>2</sub> .2H <sub>2</sub> O	Cu <sup>sq</sup> [Cl <sub>2</sub> (H <sub>2</sub> O) <sub>2</sub> ] <sup>ds</sup>	Orth. Pbmn	a=7.4141Å Z b=8.0886Å c=3.7458Å	Z=2	Cu(2a) Cl(4h) O(4e) H(8i)		Zeit.Krist.,1989, <u>189</u> ,13-15; Pov.,638-639;Str.Tab.,158; RRW,195;Hölzel,50.
LENOBLITE	V <sub>2</sub> O <sub>4.</sub> 2H <sub>2</sub> O		c	c.				Bull.Min.,1970, <u>93,</u> 235-241;Am. Min.,1971, <u>56</u> ,635-636(Abs.); Hölzel, 87;Pov.,333;RRW,352.
MASUYITE	UO <sub>3</sub> .2H <sub>2</sub> O		Orth. Pcna	a=13.98Å Z b=12.11Å c=14.20Å	Z=24			Am.Min.,1960, <u>45,</u> 1026-1061; Pov.,320-321;Str.Tab.,224; RRW,385;Hölzel,89.
METASCHOEPITE UO3.1-2H2O	UO <sub>3</sub> .1-2H <sub>2</sub> O		Orth. Pbna		Z=32			RRW,399;Pov.,749;Str.Tab., 226;Am.Min.,1960, <u>45,</u> 1027- 1061;Am.Min.,1965, <u>50,</u> 235- 239.
METASTUDTITE	UO4.2H <sub>2</sub> O		Orth. I mmm	a=6.51Å Z b=8.78Å c=4.21Å	Z=2			Am.Min.,1983, <u>68</u> ,456-458; Hölzel,89.
MEYMACITE	WO <sub>3</sub> .2H <sub>2</sub> O		Amorph.					Am.Min., 1968, <u>53,</u> 1065(Abs.); RRW, 404, Pov., 749, 320; Str. Tab., 224; Hölzel, 81.

#### A<sub>m</sub>B<sub>n</sub>.nAq.(cont.)

NAME	CHEMICAL	STRUCTURAL FORMULA	SPACE	UNIT CELL DIMENSIONS	MENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
NAVAJOITE	V <sub>2</sub> O <sub>5</sub> .3H <sub>2</sub> O		Mon. ?	a=17.43Å b=3.65Å c=12.25Å	β=97° Z=6			Am.Min.,1990,7 <u>5</u> ,508-521; RRW,431;Pov.,321;Str.Tab., 220:Hözel 87
NICKELBISCHO- FITE	NiCl <sub>2</sub> .6H <sub>2</sub> O	Ni <sup>[//8]</sup> [(H <sub>2</sub> O) <sub>6</sub> Cl <sub>2</sub> ]	Mon. C2/m	a=10.318Å b=7.077Å	β=122.37° Z=2			Am.Min., 1980, <u>65,</u> 207-208; Hölzel, 50.
OPAL	SiO <sub>2</sub> .nH <sub>2</sub> O		Amorph.	-				Am.Min.,1975, <u>60,</u> 749-757; RRW 448:Str Tab 195
ROKÜHNITE	FeCl <sub>2</sub> .2H <sub>2</sub> O		Mon. C2/m	A=7.396Å B=8.458Å C=3.838Å	β=97.68° Z=2			Am.Min., 1981, <u>66</u> , 219 (Abs.); Min. Abs., 82M/4662; Hölzel, 50.
SCHOEPITE	UO <sub>3</sub> .2H <sub>2</sub> O	U <sup>[7]</sup> [O <sub>3</sub> (H <sub>2</sub> O) <sub>2</sub> ]	Orth. P2 <sub>1</sub> ca	A=14.337Å B=16.813Å C=14.731Å	Z=32	U <sub>I-VIII</sub> (4a)		Can.Min.,1996,34,1071-1088; Pov.,320;Str.Tab.,225;RRW, 545:Hölzel 89
SIDWILLITE	MoO <sub>3</sub> .2H <sub>2</sub> O	Mo <sup>o</sup> [O <sub>3</sub> (H <sub>2</sub> O) <sub>2</sub> ] <sup>e7</sup>	Mon. P2 <sub>1</sub> /n	A=10.618Å B=13.825Å C=10.482Å	β=91.61° Z=16			Am.Min.,1986,71,1546;Hölzel, 81;Bull.Min.,1985,108,813-823
SILHYDRITE	Si <sub>3</sub> O <sub>6</sub> .H <sub>2</sub> O		orth.	I .	Z=1			Am.Min.,1972, <u>57</u> ,1053-1065; Hölzel,72;RRW,561.
SINJARITE	CaCl <sub>2</sub> .2H <sub>2</sub> O		Tet.	a=7.19Å c=5.85Å	Z=2			Hölzel,50;Min.Mag.,1980,43, 643-645.
STUDTITE	UO4.4H <sub>2</sub> O		Mon. C2	a=11.85Å b=6.80Å c=4.25Å	β=93°51' Z=2			Am.Min.,1974,59,166-171; RRW,589;Hölzel,89.
TUNGSTITE	WO <sub>3</sub> .H <sub>2</sub> O		Orth. Pmnb	٤				Enc.Min.Nam.,310;Hölzel,81; Pov.,320;Str.Tab.,224.

#### ApBqCr.nAq.

NAME	CHEMICAL	STRUCTURAL	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
ADMONTITE	Mg2B12O20.15H2O		Mon.	a=12.68Å	B=109°68'			Enc.Min.Nam.,10;Am.Min.,
	; ;		P2 <sub>1</sub> /c	b=10.07Å	Z=2			1980, <u>65,</u> 205(Abs.);Min.Abs.,
				c=11.32A				81-1866;HOIZeI,116.
AHLFELDITE	NiSeO <sub>3</sub> .2H <sub>2</sub> O	Ni <sup>[4+2]</sup> Se <sup>[3n]</sup> [O <sub>3</sub> (H <sub>2</sub> O) <sub>2</sub> ]	Mon.	a=7.53Å	β=88°5'			RRW,6; Am. Min., 1969, 54, 448-
		(=Cobaltomenite)	P2 <sub>1</sub> /n	b=8.76Å	Z=4			456; Am. Min., 1963, 48, 1183
				c=6.43Å		. <del>-</del>		(Abs.);Pov.,565-566;Str.1ab., 228.
ALUNOGEN	Al <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub> .17H <sub>2</sub> O	(H <sub>2</sub> O) <sub>17</sub> Al <sub>2</sub> <sup>2</sup> {g}{S}O <sub>4</sub> ] <sub>3</sub> .	Tric.	a=7.420Å		Al-11(2i) S <sub>1-111</sub> (2i)		Am.Min.,1976,61,311-317;SR,
	2		٦.	b=26.97Å		O <sub>I-XII</sub> (2i)		41A,343-344;SR,42A,368-369;
				c=6.062Å				RRW,15;Pov.,593.
ANNABERGITE	Ni <sub>2</sub> (AsO <sub>4</sub> ) <sub>2</sub> .8H <sub>2</sub> O	Ni <sup>3</sup> As <sup>3</sup> fO <sub>8</sub> (H <sub>2</sub> O) <sub>8</sub> 1	Mon.	a=10.179Å	B=105.00°	Ni <sub>1</sub> (2a) Ni <sub>11</sub> (4g)		Eur.J.Min.,1996,8,187-192;LF,
	7/- 10	(=Vivianite)	C2/m	b=13.309Å	Z=2	As(4i)		307;RRW,26,Pov.,726,523,
				c=4.725Å				558;Str.Tab.,335.
APACHITE	Cu <sub>9</sub> Si <sub>10</sub> O <sub>29</sub> .11H <sub>2</sub> O		Mon.	a=12.89Å	β=90.42°			Min.Mag.,1980,43,639-641;
	!		٠	b=6.055Å	Z=1			Am.Min., 1980, 65, 1065 (Abs.);
				c=19.11Å				Hölzel, 209.
APLOWITE	(Co,Mn,Ni)SO4.	(Co,Mn,Ni)°S¹	Mon.	a=5.94Å	β=90°30′			RRW,30;Pov.,602;Str.Tab.,
	4H <sub>2</sub> O	[O <sub>4</sub> (H <sub>2</sub> O) <sub>4</sub> ]	P2 <sub>1</sub> /n	b=13.66Å	Z=4			281;Hölzel,126.
		C		200.10				-: 1000 100 11 000 1
ARAVAIPAITE	Pb3AIF9.H2O	Pb <sub>3</sub> Al'[F <sub>9</sub> (H <sub>2</sub> O)]	Tric.	a=5.842Å	α=93.84°			Am.Min., 1989, 74,927-933; Min.
			<u>۲</u> :	b=25.20A	β=90.14°	_		Abs., 90M/20 / 4; Holzer suppl
				c=5.652Å	γ=85.28° Z=4			
ALIRORITE	(Mn An Ca)Mn2O-		Tric	2				Enc.Min.Nam., 27:Pov., 333; Str.
	3H.O		υ !+-					Tab. 219:Am.Min., 1967,52.
	27		:					1581(Abs.);Hölzel,85.
BARIĆITE	(Mg, Fe) <sub>3</sub> (PO <sub>4)2</sub> .	(Mg,Fe) <sub>3</sub> <sup>9</sup> P <sub>2</sub> <sup>1</sup>	Mon.	a=10.075Å	B=104°52'			Can.Min., 1976, 14, 403-406; LF,
	8H <sub>2</sub> O	[O <sub>8</sub> (H <sub>2</sub> O) <sub>8</sub> ] (=Vivianite)	C2/m	b=13.416Å c=4.670Å	Z=2			307;Hölzel,160.
BARNESITE	Na <sub>2</sub> V <sub>6</sub> O <sub>16</sub> .3H <sub>2</sub> O	Na <sub>2</sub> [4+2]V <sub>6</sub> [559/]	Mon.	a=12.17Å	B=95°2'			Am.Min., 1963, 48, 1187-1195;
	!	[O <sub>16</sub> (H <sub>2</sub> O) <sub>3</sub> ]	P2/m	b=3.602Å	Z=1			Am.Min., 1990, <u>75,</u> 508-521;
				c=7.78Å				Hölzel, 88; Pov., 500-501; RRW,
								51;Str.Tab.,223.
BARRERITE	(Na,K,Ca) <sub>5</sub> (Si,Al) <sub>24</sub>	(Na,K,Ca)5[19](H <sub>2</sub> O) <sub>17</sub>	Orth.	a=13.64Å	Z=2 ?			Gottardi+Galli, 1985,284;LF,
	O <sub>48</sub> .17H <sub>2</sub> O	{3∞}[(Si,Al) <sub>24</sub> <sup>t</sup> O <sub>48</sub> ] (≈Stilbite Zeolite)	Amma	b=18.20Å c=17.84Å				299;SR, <u>41A</u> ,401;Can.Min., 1997, <u>35</u> , 691-698.
BASSANITE	CaSO <sub>4</sub> .0.5H <sub>2</sub> O	,	Orth.	a=12.70Å	B=90°36'			RRW,54;Pov.,590;Str.Tab.,
			82	b=6.83Å	Z=3			291;Hölzel,131.
				C= 1 .947				

NAME	CHEMICAL	STRUCTURAL FORMULA	SPACE GROUP	UNIT CELL DIMENSIONS	MENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
BAURANOITE	BaU <sub>2</sub> O <sub>7</sub> .4-5H <sub>2</sub> O		٠	خ				Am.Min.,1973, <u>58</u> ,1111;Hölzel, 89.
BELLINGERITE	Cu <sub>3</sub> (IO <sub>3</sub> ) <sub>6</sub> .2H <sub>2</sub> O	(30)[Cu <sub>3</sub> (g)[1 <sup>[30]</sup> O <sub>3</sub> ]6(H <sub>2</sub> O) <sub>2</sub> ]	P 11.	a=7.256Å b=7.950Å c=7.856Å	$\alpha$ =105.10° $\beta$ =92.95° $\gamma$ =96.95° $Z$ =1	Cu <sub>1</sub> (1a) Cu <sub>11</sub> (2i) I <sub>1-III</sub> (2i) O <sub>1-X</sub> (2i)		Acta Cryst., 1974, <u>B30,</u> 965-974; Pov., 630; Str. Tab., 230; SR <u>, 40A,</u> 276; RRW, 59.
BIANCHITE	(Zn,Fe)SO4.6H <sub>2</sub> O	(Zn,Fe)°S'[O₄(H₂O) <sub>6]</sub> (=Hexahydrite)	Mon. C2/c	a=10.02Å b=7.26Å c=24.21Å	β=98°30' Z=8			Hölzel,127;RRW,69;Pov.,729, 591;Str.Tab.,282.
BIEBERITE	CoSO4.7H2O	Co°S'[O4(H <sub>2</sub> O) <sub>7</sub> ]	Mon. P2 <sub>1</sub> /c	a=14.13Å b=6.55Å c=11.00Å	β=105°5′ Z=4			RRW.69;Pov.,592-593;Str. Tab.,283;Hölzel,128;Encyc. Miner.Nam.,39.
BILINITE	Fe <sub>3</sub> (SO <sub>4</sub> ) <sub>4.</sub> 22H <sub>2</sub> O		Mon. P2?	ć				Enc.Min.Nam.,39;RRW,70; Pov.,598;Str.Tab.,285;Hölzel, 129.
BOBIERRITE	Mg <sub>3</sub> (PO <sub>4)2</sub> .8H <sub>2</sub> O	Mg <sub>3</sub> °P <sub>2</sub> '[O <sub>8</sub> (H <sub>2</sub> O) <sub>8</sub> ] (Dist.d.Vivianite)	Mon. C2/c	a=4.667Å b=27.926Å c=10.067Å	β=105.01° Z=4	Mgi-iii(4e) P(8f) Oi-viii(8f)		Am.Min., 1986,71,1229-1233; Pov.,558;Str.Tab.,335;RRW, 77;Hölzel,160.
BONATTITE	CuSO4.3H2O	2∞[Cu°S¹O₄(H <sub>2</sub> O)₃]	Mon. Cc	a=5.592Å b=13.029Å c=7.341Å	β=97°3' Z=4	Cu(4a) S(4a) O <sub>I-VII</sub> (4a)		Acta Cryst., 1968, B24, 508-513; Pov., 590; Str. Tab., 280; RRW, 79; SR, 33A, 368-369; Zeit. Krist., 1998, <u>213</u> , 141-150.
ВООТНІТЕ	CuSO <sub>4</sub> .7H <sub>2</sub> O	Cu°S'[O4(H <sub>2</sub> O) <sub>7</sub> ]	Mon. P2 <sub>1</sub> /c	a=11.83Å b=7.29Å c=10.94Å	β=105°36' Z=4			Hölzel,127;Pov.,592-593;Str. Tab.,283;RRW,79.
BOYLEITE	(Zn,Mg)SO <sub>4.4</sub> H <sub>2</sub> O		Mon. P2 <sub>1</sub> /n	a=5.95Å b=13.60Å c=7.96Å	β=90°18′ Z=4			Am.Min.,1979, <u>64</u> ,241-245 (Abs.);Str.Tab.,511,440; Hölzel,126.
BROCKITE	(Ca,Th,Ce)PO <sub>4</sub> . H <sub>2</sub> O	(Ca,Th,Ce) <sup>[8]</sup> P¹ [O₄ (H₂O)] (=Rhabdophane-Ce)	Hex. P6 <sub>2</sub> 22	a=6.98Å c=6.40Å	Z=3			Am.Min., 1962,47, 1346-1355, Pov.,546-547; Str. Tab., 314; RRW, 89-90; Hölzel, 165
BRÜGGENITE	Ca(IO <sub>3)2</sub> .H <sub>2</sub> O		Mon. P2 <sub>1</sub> /c	a=8.505Å b=10.000Å c=7.498Å	β=95°15' Z=4			Am.Min.,1972, <u>57,</u> 1191(Abs.); RRW,91-92;Hölzel,95.
CADWALADERI- TE	AICI(OH) <sub>2</sub> .4H <sub>2</sub> O		Amorph.	•				Pov.,659;Str.Tab.,159;RRW, 99;Hölzel,54.
CALCIOURANOI- TE	(Ca,Ba,Pb,K,Na)U <sub>2</sub> O <sub>7</sub> .5H <sub>2</sub> O		ہ د	٤				Am.Min.,1975, <u>60</u> ,161(Abs.); Hölzel, 89

NAME	CHEMICAL	STRUCTURAL FORMIII A	SPACE	UNIT CELL DIMENSIONS	MENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
CALKINSITE -	(Ce,La) <sub>2</sub> (CO <sub>3</sub> ) <sub>3</sub> .		Orth.	a=9.57Å	2=4			RRW,103,Pov.,618;Str.Tab.,
- (Ce)	4H <sub>2</sub> O		P2,22,	b=12.65Å c=8.94Å				246;Hölzel,105.
CARLHINTZEITE	Ca <sub>2</sub> AIF <sub>7</sub> .H <sub>2</sub> O		- 1 - 1 - 1 - 1	8=9.48Å o	α=91.4° β=104.85°			Am.Min.,1980, <u>65</u> ,205-206 (Abs.); Hölzel,52.
			<u>:</u>	•	γ=90.0° Z=4			
CARNALLITE	KMgCl <sub>3</sub> .6H <sub>2</sub> O	K°Mg°[Cl <sub>3</sub> (H <sub>2</sub> O) <sub>6</sub> ]	Orth.	a=16.119Å	Z=12	K <sub>I</sub> (4c) K <sub>II</sub> (8e)		Am.Min., 1985, 70, 1309-1313;
	•		Pnna	b=22.472Å		Mgi(4d) Mgii(8e)		LF,309;RRW,108;Pov.,640;Str. Teb 164:Hölzel 52:SR 7 19.
				K100.840		Cii(4d) Ciii-V(0e)		21.
CHALCANTHITE	CuSO <sub>4</sub> .5H <sub>2</sub> O	(H <sub>2</sub> O){1∞}[Cu'S <sup>t</sup>	Tric 1.i.c	a=6.116Å	$\alpha = 82.36^{\circ}$	Cu <sub>l</sub> (1a) Cu <sub>ll</sub> (1e) S(2i) O <sub>LV</sub> (2i)		Sov.Phys.Cryst.,1983, <u>28</u> ,383- 387;LF,317;RRW,117;Pov.,
		(=Pentahydrite)	•	c=5.961Å	y=102.61° Z=2	H <sub>-x</sub> (2i)		591;Str.Tab.,281;Hölzel,127; Zeit.Krist.,1998, <u>213</u> ,141-150.
CHALCOMENITE	CuSeO <sub>3</sub> .2H <sub>2</sub> O	Cu°Se <sup>[30]</sup> [O <sub>3</sub> (H <sub>2</sub> O) <sub>2</sub> ]	Orth.	a=6.67Å	Z=4	Cu(4a) S(4a)		SR, <u>22,474;Am.Min.,1964,49,</u>
		(=Teineite,≈Ahlfeldite)	P2 <sub>1</sub> 2 <sub>1</sub> 2 <sub>1</sub>	b=9.19A c=7.38Å		O <sub>I-V</sub> (48)		1401-1403, RKW, 110-113, Pov., 564-566; Str. Tab., 227-
		0 100		1 500 8	9-0	72/62/ 112/406		Am Min 1088 73 1401-1404
CHALCOPHANITE	(Zn, Fe, Mn) Mn <sub>3</sub> O <sub>7</sub> . 3H <sub>2</sub> O	(Zn, Fe, Mn) 'Mn <sub>3</sub> ' [O <sub>7</sub> (H <sub>2</sub> O) <sub>3</sub> ]	_ က ည်းက	a=7.533A c=20.794Å	9=7	Zn(6c) Mn(18t) O⊩ll(18t) Olv(6c)		Pov.,329-330;Str.Tab.,219;
								RRW,119;SR,19,454-455.
CHURCHITE -	NdPO <sub>4</sub> .2H <sub>2</sub> O	200[Nd <sup>(6+2]</sup> (H <sub>2</sub> O) <sub>2</sub> P <sup>4</sup> O <sub>4</sub> ]		a=5.61Å	β=115.3°		Dist.deriv.	Min.Abs.,88-1076;RRW,132,
(pN)-			A2/a	b=15.14A c=6.19Å	<b>b=7</b>		GYPSUM.	517,587,339;LF,248.
CHURCHITE - (Y)	(Y,Er)PO4.2H <sub>2</sub> O	$2\infty[(Y,Er)^{[6+2]}(H_2O)_2$	Mon.	a=5.47Å	B=113°24'		Dist.deriv.	
		P'O₄]	A2/a	b=15.15Å c=6.29Å	Z=4		2∞[Ca <sup>tor2</sup> (H <sub>2</sub> O) <sub>2</sub> S'O] GYPSUM	
CHVALETICEITE	(Mn,Mg)SO <sub>4</sub> .6H <sub>2</sub> O		Mon. C2/c	a=10.05Å b=7.24Å	β=98.0° Z=8			Am.Min., 1987, <u>72,</u> 1023-1028 (Abs.); Hölzel, 127.
		(		c=24.3A	C	(10) (0) (0F)		Occ. Min. 1005 22 622 620.
CLARINGBULLI- TE	Cu <sub>4</sub> Cl(OH) <sub>7.</sub> nH <sub>2</sub> O	Cu <sup>2</sup> Cu <sub>3</sub> <sup>2</sup> [(OH) <sup>2</sup> Cl(H <sub>2</sub> O) <sub>1</sub> ]	Hex. P63/mmc	a=6.6733A c=9.185Å	Z=2	Cu <sub>i</sub> (2a) Cu <sub>ii</sub> (6h) Ci <sub>i</sub> (2d) Ci <sub>ii</sub> (2b)		Can.Min.,1995 <u>,33</u> ,633-639; Min.Mag.,1977, <u>41</u> ,433-436.
CLINOCHALCO-	CuSeO <sub>3.2</sub> H <sub>2</sub> O		Mon.	a=8.177Å	β=97°16'	•••		Am.Min., 1981, 66, 217 (Abs.);
MENITE	1		P2 <sub>1</sub> /n	b=8.611Å c=6.290Å	Z=4			Hölzel,92.
COBALTOMENI- TE	CoSeO <sub>3</sub> .2H <sub>2</sub> O	Co°Se <sup>[3n]</sup> [O <sub>3</sub> (H <sub>2</sub> O) <sub>2</sub> ] (=Ahlfeldite)	Mon. P2 <sub>1</sub> /n	a=6.46Å b=8.75Å c=7.55Å	β=99°0′ Z=4			Pov.,565-566,Str.Tab.,228; RRW,139;Hölzel,92.
				53.71			_	

NAME	CHEMICAL	STRUCTURAL	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
COQUIMBITE	Fe <sub>2</sub> (SO <sub>4)3</sub> .9H <sub>2</sub> O	(H <sub>2</sub> O) <sub>6</sub> (g)[Fe <sub>3</sub> °S <sub>6</sub> O <sub>24</sub> (H <sub>2</sub> O) <sub>6</sub> ](g)[Fe°(H <sub>2</sub> O) <sub>6</sub> ]	Trig. P 31c	a=10.922Å c=17.084Å	Z=4	Fe <sub>1</sub> (2b) Fe <sub>11</sub> (2c) Fe <sub>111</sub> (4f) S(12i)		Am.Min., 1970, <u>55</u> , 1534-1540; Pov., 593; Str.Tab., 284; RRW, 145, 146; SR, 404, 310; 7eit
								Krist., 1998, 213, 141-150.
соуотепте	NaFe <sub>3</sub> S <sub>5</sub> .2H <sub>2</sub> O	Na'Fe₃[S₅(H₂O)₂□] <sup>n</sup>	Tric. D1	a=7.409Å	$\alpha = 100^{\circ}25'$			Am.Min., 1983, <u>68</u> , 245-254; Hölzel 26:K/S 166
		d.Wurtzite)	: -	c=6.441Å	y=81°29' γ=81°29' Z=2			
CUPROTUNGSTI-	Cu <sub>3</sub> (WO <sub>4</sub> ) <sub>2</sub> .2H <sub>2</sub> O	Cu <sub>3</sub> W <sub>2</sub> [O <sub>8</sub> (H <sub>2</sub> O) <sub>2</sub> ]	Tet.	a=8.93Å	Z=6 ?			Encyc.Miner.Nam.,75;Min.
1		(≈Lindgrenite)	P4 <sub>1</sub> 2 <sub>1</sub> 2	c=14.48A				Mag.,1979,43,448450;Min. Abs.,88M/6059;Pov.,571.
CUZTICITE	Fe <sub>2</sub> TeO <sub>6</sub> .3H <sub>2</sub> O		~ Hex.	a=5.045Å c=10.63Å	Z=2			Min.Abs., 1983, <u>68</u> ,471 (Abs.); Hölzel, 135.
CYMRITE	Ba(Si,Al) <sub>4</sub> O <sub>8</sub> .H <sub>2</sub> O	Ba <sup>[9]</sup>		a=5.33Å	β=90°			Sov.Phys.Cryst.,1975, <u>20</u> ,171-
		{2∞}[(Si,Al)₄'O <sub>8</sub> (H <sub>2</sub> O)]	<b>7</b> 7	b=36.6A c=7.67Å	Z=8:5			173,P0V.,330,SR, <u>41A,</u> 301-302, Am.Min.,1964, <u>49</u> ,158-165; RRW,160; Hölzel,237
DACHIARDITE	(Na,K,Ca <sub>0.5</sub> ) <sub>4</sub>	(Na,K,Ca <sub>0.5</sub> ) <sub>4</sub> (H <sub>2</sub> O) <sub>18</sub>	Mon.	a=18.676Å	β=107.87	(AI,Si) <sub>I-IV</sub> (8j)		Zeit.Krist.,1984,166,63-71;
	(AI <sub>4</sub> Si <sub>20</sub> )O <sub>48</sub> .18H <sub>2</sub> O	3∞}[Al₄'Si₂₀¹O₄8] (Zeolite)	C2/m	b=7.518Å c=10.246Å	Z=1 ?	(AI,SI) <sub>V-VI</sub> (4i) (v.occ.)		Pov.,358;Str.Tab.,488;RRW, 162;SR, <u>28</u> ,251-254.
DIOPTASE	CuSiO <sub>3</sub> .H <sub>2</sub> O	Cue [4+2]	Trig.	a=14.566Å	a <sub>R</sub> =8.85Å	Cu(18f) Si(18f)		Am.Min.,1977, <u>62</u> ,807-811;LF,
		[[H <sub>2</sub> O] <sub>6</sub> [g][Si <sub>6</sub> O <sub>18</sub> ]]	<u>د</u>	c=7.778Å	$\alpha = 111^{\circ}52'$	O <sub>I-III</sub> (18f)		196;SR, 16,348-349,19,465-
				2=3 2R   (ref.str.formula)	ZR-1			1989, 187, 15-23.
DWORNIKITE	(Ni,Fe)SO <sub>4</sub> .H <sub>2</sub> O	3∞[(Ni,Fe)°(H <sub>2</sub> O)	Mon.	a=6.839Å	β=117.85			Am.Min.,1983, <u>68</u> ,642(Abs.);
		S <sup>t</sup> O <sub>4</sub> ]	C2/c	b=7.582Å	Z=4			Min.Abs.,82M-4667;LF,277; Hölzel,126.
EMMONSITE	Fe <sub>2</sub> (TeO <sub>3</sub> ) <sub>3</sub> .2H <sub>2</sub> O	Fe <sub>2</sub> °Te <sub>3</sub> <sup>[509]</sup> [O <sub>9</sub> (H <sub>2</sub> O) <sub>2</sub> ]	Tric.	a=7.90Å	α=96.7°			SR,39A,323;Pov.,567;Str.Tab.,
		(≈Mackayite)	<u>С</u> 17-	b=8.00Å c=7.62Å	β=95.0° γ=84.5°			228,RRW,189;Hölzel,93.
					Z=2			
EPSOMITE	MgSO <sub>4</sub> .7H <sub>2</sub> O	Mg°S'[O <sub>4</sub> (H <sub>2</sub> O) <sub>7</sub> ]	Orth. P2 <sub>1</sub> 2 <sub>1</sub> 2 <sub>1</sub>	a=11.868Å b=11.996Å	Z=4	Mg(4a) S(4a) O⊦ıv(4a)		Acta Cryst.,1964, <u>17,</u> 1361- 1369;LF,313;Acta Cryst.,1984, B40,318,323;Boy, 503
FROITE	NaFeS, 2H,O	Na <sup>[6]</sup> Fe <sup>[</sup> IS <sub>2</sub> (H <sub>2</sub> O) <sub>2</sub> ]	Mon.	a=10.693Å	B=92.17°	Na(4e) Fe(4e)		Am.Min., 1980, 65, 516-521, 509.
	2.13.20	77(-21.17-)	C2/c	b=9.115Å c=5.507Å	Z=4	S(8f) O(8f)		515;SR, <u>46A</u> ,298.
ERYTHRITE	Co <sub>3</sub> (AsO <sub>4</sub> ) <sub>2</sub> .8H <sub>2</sub> O	Co <sub>3</sub> <sup>o</sup> As <sub>2</sub> <sup>t</sup> [O <sub>8</sub> (H <sub>2</sub> O) <sub>8</sub> ] (=Vivianite)	Mon. C2/m	a=10.251Å b=13.447Å	β=104.98° Z=2	Co <sub>1</sub> (2a) Co <sub>11</sub> (4g) As(4i) O <sub>1-11</sub> (4i)		Eur.J.Min.,1996, <u>8</u> ,187-192; Pov.,523:LF,307;RRW,196; Str Tab. 335
ERYTHROSIDERI- K2FeCl5.H2O	K <sub>2</sub> FeCl <sub>5</sub> .H <sub>2</sub> O	Fe°[Cl <sub>5</sub> K <sub>2</sub> (H <sub>2</sub> O)]	Orth.	a=13.75Å	Z=4	Fe(4c) Cl <sub>1-III</sub> (4c)		SR,11.419-420;Pov.,641-642;
2	,		Pnma	b=9.92A c=6.73Å		Cliv(8d) K(8d) H <sub>2</sub> O(4c)		Str. 1ab. 164; KKVV, 196.

NAME	CHEMICAL	STRUCTURAL FORMULA	SPACE	UNIT CELL DIMENSIONS	MENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
FERRIERITE - (orthorhombic)	(Mg,K,Ca) <sub>4,4</sub> (Si,Al) <sub>36</sub> O <sub>72</sub> .18H <sub>2</sub> O	(Mg,K,Ca) <sub>44</sub> (H <sub>2</sub> O) <sub>16</sub> {∞}{(Si,Al)₃ <sup>c</sup> O <sub>72</sub> ] (≈Mordenite,Zeolite)	OF	a=19.231Å b=14.145Å c=7.499Å	Z=1	Mg(2c) K(4e) v.occ. (Si,Al) <sub>II-III</sub> (4g) (Si,Al) <sub>IV</sub> (8h)		Zeit.Krist., 1987, <u>178,</u> 249-256; Min.Mag., 1986, <u>50,</u> 63-68; Pov., 355; Str.Tab., 488; LF, 297; RRW, 209.
FERRIMOLYBDI- TE	Fe <sub>2</sub> (MoO <sub>4</sub> ) <sub>3</sub> .7H <sub>2</sub> O		Orth. Pmmn	a=6.665Å b=15.423Å c=29.901Å	Z=8			Hölzel suppl.;Am.Min.,1963, 48,14-32;Pov.,570;Str.Tab., 302;RRW,209;
FERRITUNGSTITE	(K,Ca) <sub>0.2</sub> (W,Fe) <sub>2</sub> (O,OH) <sub>6</sub> .H <sub>2</sub> O	(K,Ca) <sub>0,2</sub> <sup>th</sup> □ <sub>0,8</sub> <sup>th</sup> (W,Fe) <sub>2</sub> <sup>th</sup> [(O,OH) <sub>6</sub> (H <sub>2</sub> O)□] <sup>cs</sup> [(O,OH) <sub>6</sub> (H <sub>2</sub> O)□] <sup>cs</sup> (Defect.d.Pyrochlore)	Cub. Fd 3m	a=10.352Å	Z=8	(Ca,K)(16d) (W,Fe)(16c) O(48f) H <sub>2</sub> O(8b)		Can.Min.,1994, <u>32</u> ,567-574; Pov.,570;Str.Tab.,302;RRW, 211;LF,140.
FERROHEXA- HYDRITE	FeSO <sub>4</sub> .6H <sub>2</sub> O	Fe°S'[O <sub>4</sub> (H <sub>2</sub> O) <sub>6</sub> ]	Mon. C2/c	a=10.08Å b=7.28Å c=24.59Å	β=98°30' Z=8			Hölzel,127;RRW,211;Am.Min., 1963, <u>48</u> , 433(Abs.);Pov.,591- 592;Str.Tab.,282.
FERVANITE	Fe <sub>4</sub> (VO <sub>4</sub> ) <sub>4</sub> .5H <sub>2</sub> O		Mon. ?		β=103°20′ Z=?			Str.Tab.,330;Pov.,500;Hölzel, 161;Am.Min.,1990, <u>75</u> ,508-521; Am.Min.,1959, <u>44</u> ,322-341.
FRANCONITE	Na <sub>2</sub> Nb <sub>4</sub> O <sub>11</sub> .9H <sub>2</sub> O		Mon.	a=22.22Å b=12.857Å c=6.359Å	β=92.24° Z=4			Am.Min.,1985 <u>,70,</u> 436-437 (Abs.); Hölzel,86.
GEARKSUTITE	CaAl(F,OH) <sub>5</sub> .H <sub>2</sub> O		<i>د</i>	٠				RRW,231;Pov.,653;Str.Tab., 161;Hölzel,54.
GERASIMOVSKI- TE	(Mn,Ca)(Nb,Ti) <sub>5</sub> O <sub>12</sub> .9H <sub>2</sub> O		Amorph.	ċ				RRW,234;Am.Min.,1958,43, 1220-1221;Pov.,333;Str.Tab., 199;Hölzel,85.
GERSTLEYITE	Na <sub>2</sub> (Sb,As) <sub>8</sub> S <sub>13</sub> . 2H <sub>2</sub> O	Na <sub>2</sub> <sup>[4+2]</sup> {1∞}[(Sb,As) <sub>8</sub> <sup>[3n]</sup> S <sub>13</sub> (H <sub>2</sub> O) <sub>2</sub> ]	Mon. Cm	a=9.911Å b=23.05Å c=7.097Å	β=127.85° Z=2			Min.Abs.,82M/1149;RRW,235; Pov.,266;Hölzel,47.
GILALITE	Cu <sub>5</sub> Si <sub>6</sub> O <sub>17.</sub> 7H <sub>2</sub> O		Mon. ?	a=13.38Å b=19.16Å c=9.026Å	β≈90° Z=1			Am.Min.,1980, <u>65,</u> 1065(Abs.); Hölzel,210;Min.Mag.,1980, <u>43,</u> 639-641.
GINORITE	Ca <sub>2</sub> B <sub>14</sub> O <sub>23</sub> .8H <sub>2</sub> O		Mon. P2₁/a	a=12.74Å b=14.36Å c=12.82Å	β=100°46' Z=4			Pov.,480;Hölzel,119;Str.Tab., 260;RRW,237.
m	(Na,Ca) <sub>2</sub> (Si,Al) <sub>5</sub> O <sub>10</sub> .3H <sub>2</sub> O	(Na,Ca) <sub>2</sub> <sup>(</sup> (H <sub>2</sub> O) <sub>3</sub> {3∞}{(Si,Al) <sub>5</sub> <sup>(</sup> O <sub>10</sub> ] (≈Natrolite,Zeolite)	Tet. ?	a=13.35Å b=13.35Å c=6.65Å	Z=2			Pov.,355;Gottardi & Galli, 1985,71-75;RRW,242;Str.Tab. 487; Min.Mag.,1988,52,207- 219;LF,289.
GOSLARITE	ZnSO <sub>4.</sub> 7H <sub>2</sub> O	Zn°S¹[O₄(H₂O)ァ] (=Epsomite)	Orth. P2,2,2,	a=11.87Å b=12.11Å c=6.84Å	Z=4			Pov.,592;Str.Tab.,283;RRW, 243;Hölzel,127.

NAME	CHEMICAL FORMULA	STRUCTURAL FORMULA	SPACE GROUP	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
GRAEMITE	CuTeO <sub>3</sub> .H <sub>2</sub> O		Orth. Pcmm	a=6.805Å b=25.613Å c=5.780Å	Z=10			Am.Min., 1975 <u>, 60,</u> 486 (Abs.); Hölzel, 93.
GUNNINGITE	(Zn,Mn)SO4.H <sub>2</sub> O	{3∞}[(Zn,Mn)°S¹ O₄(H2O)]	Mon. A2/a	a=7.566Å b=7.586Å c=6.954Å	β=115°56′ Z=4		Dist.deriv. {3∞}[Mg°S'O₄(H₂O)] KIESERITE	RRW,252;Pov.,590;Str.Tab., 280;Hölzel,126;Zeit.Krist., 1998,213;141-150.
GYPSUM	CaSO <sub>4</sub> .2H <sub>2</sub> O	2∞[Ca <sup>[6+2]</sup> (H <sub>2</sub> O) <sub>2</sub> S¹O₄]	Mon. I 2/a	a=5.679Å b=15.202Å c=6.522Å	β=118.43° Z=4	Ca(4e) S(4e) O <sub>I-III</sub> (8f) H <sub>I-II</sub> (8f)	2∞[Ca <sup>[6+2]</sup> (H <sub>2</sub> O) <sub>2</sub> S <sup>t</sup> O₄] GYPSUM	Acta Cryst., 1982, <u>B38</u> ,1074- 1077; LF, 248; RRW, 253; Pov., 605-606; Str. Tab., SR, <u>22</u> , 449- 450.
HANNEBACHITE	CaSO <sub>3</sub> .0.5H <sub>2</sub> O		Orth. Pbna	a=6.473Å b=9.782Å c=10.646Å	Z=8			Am.Min.,1988, <u>73</u> ,928(Abs.); Hölzel,92.
HELLYERITE	NiCO <sub>3</sub> .6H <sub>2</sub> O		Mon. C2/c	c				Encyc.Miner.Nam.,127;RRW, 265; Am.Min.,1959,44,533- 538; Pov.,617;Str.Tab.,244
HENDERSONITE	Ca <sub>2</sub> V <sub>9</sub> O <sub>24</sub> .8H <sub>2</sub> O		Orth. Pnam	a=12.40Å b=18.92Å c=10.77Å	Z=4			Am.Min.,1962,47,1252-1272; Am.Min.,1990,75,508-521; Pov.,500;Str.Tab.,223;RRW, 268:Hölzel,88.
HEWETTITE	CaV <sub>6</sub> O <sub>16</sub> .9H <sub>2</sub> O	Ca <sup>[//8]</sup> V <sub>6</sub> [O <sub>16</sub> (H <sub>2</sub> O) <sub>9</sub> ]	Mon. P2 <sub>1</sub> /m	a=12.290Å b=3.590Å c=11.174Å	β=97.24° Z=1	Ca(2e)(occ.1/2) O <sub>I-VIII</sub> (2e) V <sub>I-III</sub> (2e)		Can.Min.,1989,27,181-188; Pov.,500-501;Str.Tab,,223; RRW 272:Hölzel 88
HEXAHYDRITE	MgSO <sub>4</sub> .6H <sub>2</sub> O	Mg°S <sup>*</sup> [O <sub>4</sub> (H <sub>2</sub> O) <sub>6</sub> ]	Mon. C2/c	a=10.110Å b=7.212Å c=21.41Å	β=98.30° Z=8	Mgı(4a) Mgıı(4e) S(8f) O <sub>l-X</sub> (8f)		Acta Cryst., 1964, 17, 235-242; Pov., 591-592; Str. Tab., 282; RRW 272: Hölzel. 127
HEXAHYDRO- BORITE	Ca(B(OH) <sub>4</sub> ) <sub>2</sub> .2H <sub>2</sub> O	Ca <sup>[8]</sup> B <sub>2</sub> <sup>[</sup> [(OH) <sub>8</sub> (H <sub>2</sub> O) <sub>2</sub> ]	Mon. P2/a	a=8.006Å b=6.649Å c=8.012Å	β=104.21° Z=2	β=104.21° Ca(2e) B(4g) Z=2 O <sub>1-V</sub> (4g)		Am.Min., 1978, 63, 1283 (Abs.); Acta Cryst., 1971, <u>B27,</u> 1532- 1541: Hölzel. 113.
HILLEBRANDITE	Ca <sub>2</sub> SiO <sub>4</sub> .H <sub>2</sub> O		(Orth.) Cmc2 <sub>1</sub>	~ ~ ~	Z=6 (for SiO <sub>3</sub> )	Ca <sub>I-III</sub> (4a) Si <sub>I</sub> (8b) Si <sub>II</sub> (4a)(1/2occ.) 		Am.Min., 1995, <u>80</u> , 841-844; Pov., 417-418; Str. Tab., 378; RRW, 274: Hölzel, 1911: F. 214
HOCHELAGAITE	(Ca,Na,Sr)Nb <sub>4</sub> O <sub>11</sub> . 8H <sub>2</sub> O		Mon.	a=19.88Å b=12.83Å c=6.44Å	β=93.20° Z=4			Can.Min.,1986, <u>24</u> ,449-453; Hölzel,86.
НОРЕІТЕ	Zn <sub>3</sub> (PO <sub>4)2</sub> .4H <sub>2</sub> O	4	Orth. Pnma	a=10.597Å b=18.318Å c=5.031Å	Z=4	Zn <sub>1</sub> (4c) Zn <sub>11</sub> (8d) P(8d) O <sub>1-11</sub> (4c) O <sub>11-V11</sub> (8d)		Am.Min.,1976,61,987-995; RRW,279;Pov.,532-533;Str. Tab.,333;Hölzel,159.
HÖRNESITE	Mg <sub>3</sub> (AsO <sub>4)2</sub> .8H <sub>2</sub> O	Mg <sub>3</sub> °As <sup>2</sup> [O <sub>8</sub> (H <sub>2</sub> O) <sub>8</sub> ] (=Vivianite)	Mon. C2/m	a=10.26Å b=13.44Å c=4.74Å	β=104.9° Z=2			Am.Min.,1967, <u>52</u> ,1588(Abs.); Pov.,523;Str.Tab.,335;Hölzel, 160;LF,307.

NAME	CHEMICAL FORMIII A	STRUCTURAL FORMIII A	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT	STRUCTURE TYPE	REFERENCES
HYDROTUNGSTI- WO2(OH)2.H2O	WO <sub>2</sub> (OH) <sub>2</sub> .H <sub>2</sub> O	W <sup>1</sup> O <sub>2</sub> (OH) <sub>2</sub> (H <sub>2</sub> O)]	Mon.	a=7.45Å	β=90°			Pov.,320;Str.Tab.,224;RRW,
<b>1</b>	! !		P2/m	b=6.92Å c=3.72Å	Z=2			292;Hölzel,81.
IKAITE	CaCO <sub>3</sub> .6H <sub>2</sub> O	Ca <sup>[5]</sup> (H <sub>2</sub> O) <sub>6</sub> {g}[C <sup>1</sup> O <sub>3</sub> ]	Mon.	~ ~	β=110.53°	Ca(4e) C(4e)		Zeit.Krist., 1983, <u>163, 227-231;</u> RRW 297-Pov. 618:Str Tab
				C=11.021Å	1			245;Am.Min., 1964, 49, 439;
								Holzel, 104.
ILESITE	(Mn,Zn,Fe)SO <sub>4</sub> .	(Mn,Zn,Fe)°S¹	Mon.	a=5.94Å	β=90°47'	Fe(4e) S(4e)		Pov., 602; Str. Tab., 281; RRW,
	2 D	[O <sub>4</sub> (H <sub>2</sub> O) <sub>4</sub> ]	1,27 1,0	c=8.01Å	<b>7=7</b>	O:-w(4e) Ov:viii(4e)		826;Hölzel, 126.
JOKOKUITE	MnSO <sub>4</sub> .5H <sub>2</sub> O		Tric.	a=6.37Å	α=98°46'			Am.Min., 1979, 64, 655 (Abs.);
			<u>Ф</u>	b=10.77Å	β=109°58'			Hölzel, 127.
				c=6.13A	γ=77°50° Z=2			
KAATIALAITE	FeAs <sub>3</sub> O <sub>9</sub> .6-8H <sub>2</sub> O		Mon.	a=15.363Å	β=91.77°			Am.Min., 1984, <u>69</u> , 383-387;
			P2 <sub>1</sub>	b=19.844Å c=4.736Å	Z=4			Hölzel,164.
KANKITE	FeAsO <sub>4</sub> . 3.5H <sub>2</sub> O		Mon.	a=18.803Å	β=92.71°			Am.Min., 1977, 62, 594 (Abs.);
			۷.	b=17.490Å c=7.633Å	Z=16			Am.Min., 1985, <u>70,</u> 220(Abs.); Hölzel, 161.
KIESERITE	MgSO <sub>4</sub> .H <sub>2</sub> O	[(O <sup>2</sup> H) <sup>5</sup> O <sub>3</sub> S <sub>1</sub> O <sup>4</sup> (H <sup>5</sup> O)]	Mon.	a=6.88Å	β=117°43′	Mg(4b) S(4e)	[(O <sup>2</sup> H) <sup>6</sup> O <sub>5</sub> O <sub>7</sub> (H <sup>2</sup> O)]	SR, <u>21,</u> 361-362;Hölzel,126;
			C2/c	b=7.61Å	Z=4	O <sub>1</sub> (4e) O <sub>11-111</sub> (8f)	KIESERITE	RRW,324;Pov.,590;Str.Tab.,
				c=7.63A				280;LF,277;Zert.Knst.,1998, 213,141-150.
KILLALAITE	Ca <sub>3</sub> Si <sub>2</sub> O <sub>7</sub> .H <sub>2</sub> O	Ca <sub>2</sub> °Ca <sup>M</sup> Si <sub>2</sub> <sup>L</sup>	Mon.	a=6.807Å	B=97.76°	Ca <sub>l-li</sub> (4f)		Min.Mag.,1977,41,363-369;
		[O <sub>2</sub> (H <sub>2</sub> O)]	P2 <sub>1</sub> /m	b=15.459Å	Z=4	Call (2e)		SR,43A,316-317;Min.Mag.,
				c=6.811Å		Ca <sub>i-li</sub> <sup>(1</sup> /(2e) Si <sub>i-li</sub> (4f) (v. occ.)		1974, <u>39</u> ,544-548;Hölzel,199.
KLEINITE	Hg,N(CI,SO <sub>4</sub> ).	(CI,SO <sub>4</sub> )n(H,O)	Hex.	a=13.56Å	Z=24			Pov., 201; Str. Tab., 166; RRW,
	nH <sub>2</sub> O	(300)[N'Hg2[2]*ch*]h	P6 <sub>3</sub> /mmc	c=11.13Å				326;LF,258;Am.Min.,1978, <u>63,</u>
		(≈ β-Tridymite)						316-325;Hölzel,55.
KOLBECKITE	ScPO <sub>4</sub> .2H <sub>2</sub> O	(H2O)2{3∞}[Sc°P'O4]		a=5.45Å	β=90°45′		Dist.deriv.	Pov.,531-532;Str.Tab.,331;
			<b>       </b>	c=8.93Å	4-7		VARISCITE	Am.Min., 1960, 45, 257 (Abs.).
KONINCKITE	FePO <sub>4</sub> .3H <sub>2</sub> O	(H <sub>2</sub> O) <sub>3</sub> {3∞}[Fe°P¹O <sub>4</sub> ]	Tet.	a=11.95Å	Z=16			Pov., 531-532; Str. Tab., 334;
		(≈Scorodite)	<i>د</i>	c=14.52Å				Bull.Min., 1968, 91, 487-489; Hölzel, 161: LF, 282.
KORNELITE	Fe <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub> .7H <sub>2</sub> O	(H,O)(200)[Fe, S, <sup>1</sup> O.,	Mon.	a=14.30Å	B=96.8°	Fe(4e)		Am.Min., 1973, 58, 535-539;
	7	(H <sub>2</sub> O) <sub>6</sub> ] P2 <sub>1</sub> /n	P2 <sub>1</sub> /n	b=20.12Å		S <sub>I-III</sub> (4e)		RRW, 330, Pov., 593; SR, 39A,
				c=5.425Å		O <sub>I-XII</sub> (4e)		314;Str.Tab.,284;Hölzel,128;
								Zer.Knst.,1998, <u>213</u> ,141-150.

NAME	CHEMICAL	STRUCTURAL FORMIII A	SPACE	UNIT CELL DIMENSIONS	MENSIONS	EQUIVALENT	STRUCTURE TYPE	REFERENCES
KORSHIINOVSKI	Mas	STORING -	Tric	a=8 64Å	α=101 4°			Am.Min., 1983, 68, 643 (Abs.);
TE	3.5-4H <sub>2</sub> O		~	b=6.25Å	β=103.9°			Hölzel,53.
				c=7.42Å	γ=72.7° Z=2			
KÖTTIGITE	Zn <sub>3</sub> (AsO <sub>4</sub> ) <sub>2</sub> .8H <sub>2</sub> O	Zn3 As2 [O8(H2O)8]	Mon.	a=10.241Å	β=105.21°	Zn <sub>I</sub> (2a) Zn <sub>II</sub> (4g)		Am.Min., 1979, 64, 376-382; LF,
		(=Vivianite)	C2/m	b=13.405A c=4.757Å	Z=2	AS(4I)		30/;Pov.,523;SK,45A,323;Str. Tab.,335;RRW,328.
KRAUSKOPFITE	BaSi,O <sub>5</sub> .3H,O	Ba <sup>[9]</sup> {1∞}[Si,¹O <sub>5</sub>	Mon.	a=7.837Å	B=94°32'	Ba(4e) Si <sub>I-II</sub> (4e)		SR,32A,459-460;Am.Min.,
	1	(H <sub>2</sub> O) <sub>3</sub> ]	P2 <sub>1</sub> /c	b=10.622Å c=8.460Å	Z=4	O <sub>I-VIII</sub> (4e) H <sub>I-VI</sub> (4e)		1965, <u>50</u> ,314-340;RRW,333; Pov., 422;Str.Tab.,427.
KREMERSITE	(NH <sub>4</sub> ,K) <sub>2</sub> FeCl <sub>5</sub> .H <sub>2</sub> O	Fe <sup>2</sup> [Cl <sub>5</sub> (NH <sub>4</sub> ,K) <sub>2</sub>	Orth.	a=13.78Å	Z=4			RRW,333;Hölzel,52;Str.Tab.,
		(H <sub>2</sub> O)]	Pnma	b=9.85A c=7.09Å				164.
LANSFORDITE	MgCO <sub>3</sub> .5H <sub>2</sub> O		Mon.	a=12.48Å	β=101°46'			RRW,342;Pov.,617;Str.Tab.,
			P2 <sub>1</sub> /m	b=7.55Å c=7.34Å	Z=4			244;Hölzel104.
LANTHANITE -	(Ce,La,Nd) <sub>2</sub> (CO <sub>3</sub> ) <sub>3</sub> .	1	Orth.	a=9.482Å	Z=4	Lai(4c) Laii(4d)		Am.Min.,1985,70,411-413;SR,
- (Ce)	8H <sub>2</sub> O		Pbnb	b=16.938Å c=8.965Å		C <sub>I</sub> (4d) C <sub>II</sub> (8e)		33A,433-435;SR,43A,236; RRW, 342;Hölzel105.
L ANTHANITE -	(La.Ce),(CO <sub>2</sub> ),	(H,O) <sub>a</sub>	Orth.	a=9.504Å	Z=4	RE(4d) RE((4c)		Am.Min., 1977, 62,, 142-146; Str.
-(La)	8H <sub>2</sub> O	{2∞}[ (La,Ce) <sub>2</sub> <sup>[10]</sup>	Pbnb	b=16.943Å		C <sub>1</sub> (4c) C <sub>11</sub> (8e)		Tab.,246;Pov.,618;Hölzel,105.
		(g)[C"O <sub>3 3</sub> ]	:	C-0.93/A	,			A BA: 4004 00 007 000.
LANTHANITE -	(Nd,La) <sub>2</sub> (CO <sub>3</sub> ) <sub>3</sub> .	(H <sub>2</sub> O) <sub>8</sub>	O E	8=9.4/6A h=16.940Å	<b>5=7</b>			Am.Min., 1981, <u>98,</u> 637-639; Hölzel 105
(pa) -	<b>D</b>	{g}{C'O <sub>3</sub> ] <sub>3</sub> ]	2	c=8.942Å				
LAUSENITE	Fe <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub> .6H <sub>2</sub> O		Mon.	خ				RRW,346;Pov.,593;Str.Tab.,
TIM AMITE	(Fe Mc Mn),(PO.),	(Fe Ma Ma) OP,	Mon	a=10 541Å	R=100°25'	Fe <sub>1</sub> (2a) Fe <sub>11</sub> (4e)		J.Chem.Phys., 1966.44, 2223-
	4H <sub>2</sub> O	[O <sub>8</sub> (H <sub>2</sub> O) <sub>4</sub> ]	P2 <sub>1</sub> /a	b=4.646Å	Z=2	P(4e)		2229;RRW,366;Pov.,553;Str.
THOOK I IN	MPSO 7H.O	Mn <sup>0</sup> S'[O,(H <sub>0</sub> O)-1	Mon	a=14 15A	B=105°36°			Min Abs. 82M/4639:RRW.377.
MALLANDITE	WIII 504. 1120	(≈Melanterite)	P2,/c	b=6.50Å	Z=4			Pov., 592; Str. Tab., 283; Hölzel,
		)	-	c=11.06Å				128.
MANDARINOITE	Fe <sub>2</sub> (SeO <sub>3</sub> ) <sub>3</sub> .6H <sub>2</sub> O		Mon.	a=16.810Å	β=98°26'			Am.Min.,1985,70,440(Abs.);
			P2 <sub>1</sub> /c	b=7.880Å c=10.019Å	Z=4			Am.Min.,1980, <u>65,</u> 206(Abs.); Hölzel,92.
MANGANBELY-	(Mn,Ca)(Ti,Nb) <sub>5</sub>		Amorph.	خ				Am.Min.,1958,43,1220-1221 (Abs.):Pov.,458.
MANGANESE-	(Mn,Mg) <sub>3</sub> (AsO <sub>4)2</sub> .	(Mn,Mg)3 <sup>o</sup> As2 <sup>t</sup>	Mon.	a=10.38Å	B=105°40'			Pov., 523; RRW, 378-379;
HÖRNESITE	8H <sub>2</sub> O	[O <sub>8</sub> (H <sub>2</sub> O) <sub>8</sub> ] (Dist.d.Vivianite)	P2 <sub>1</sub> /c	b=28.09Å c=4.77Å	Z=4			Hölzel, 160.

MANJIROITE (Na,K)Mn <sub>8</sub> O <sub>16</sub> .  MANSFIELDITE AIASO <sub>4.2</sub> H <sub>2</sub> O  MEIXNERITE Mg <sub>6</sub> Al <sub>2</sub> (OH) <sub>16</sub> .  MELANOVANADI- CaV <sub>4</sub> O <sub>10.5</sub> H <sub>2</sub> O	K)Mn <sub>8</sub> O <sub>16</sub> .					POSITIONS		
MANSFIELDITE AIASO4.7  MEIXNERITE MgeAb((	9 9	Mno	Tet	2=9 916Å	7=1		Mn. (Ba K)O. Ichn	Am Min. 1968 53 2103(Abs.):
MANSFIELDITE AIASO4.7  MEIXNERITE MgeAl2((		[(Na,K)O <sub>16</sub> (H <sub>2</sub> O) <sub>n</sub> ] <sup>chh</sup>	I 4/m	c=2.864Å			HOLLANDITE	Pov., 305; LF, 107; RRW, 381;
MANSFIELDITE AIASO4.3  MEIXNERITE MgeAl2(( MELANOVANADI- CaV4O1)								Holzel, /3;Str. I ab., 200.
MEIXNERITE Mg <sub>6</sub> Al <sub>2</sub> ((	2H <sub>2</sub> O	(H <sub>2</sub> O) <sub>2</sub> {3∞}[Al°As <sup>t</sup> O <sub>4</sub> ]	orth.	a=10.08Å	Z=8		(H <sub>2</sub> O) <sub>2</sub> {3∞}[Al°P'O <sub>4</sub> ]	RRW,381;Pov.,508;Str.Tab.,
MELANOVANADI- CaV₄O₁ı			Pcab	b=9.76A c=8.72Å			VARISCILE	332;H0lzel,161;LF,282.
MELANOVANADI- CaV4O10	Mg <sub>6</sub> Al <sub>2</sub> (OH) <sub>18</sub> .4H <sub>2</sub> O	,	Trig.	a=3.0463Å	Z=3/8			Am.Min.,1976,61,176(Abs.);
MELANOVANADI- CaV4O10			H 3H	C=22.93A				Holzel, 107.
	0.5H <sub>2</sub> O		Ji Ji	a=6.360Å	α=110.18°	Ca11(2i) VVI(2i)		Am.Min., 1987, 72,637-644;
<u></u>			-	b=18.090A	β=101.62°	:		200.U31.01.1 aD., 222, NAV.,
				c=6.276A	γ=82.86° Z=4 ?			389;HOIZeI,88.
MELANTERITE FeSO <sub>4.7</sub> H <sub>2</sub> O		Fe <sup>o</sup> S'[O <sub>4</sub> (H <sub>2</sub> O) <sub>7</sub> ]	Mon.	a=14.072Å	β=105°34'	ı		Acta Cryst.,1964,17,1167-
			P2 <sub>1</sub> /c	b=6.503Å c=11.041Å	Z=4	S(4e)		1174;SR, <u>29</u> ,351-352;LF,314; RRW,390;Pov.,592-593.
META- Al <sub>2</sub> (SO <sub>4</sub> )	Al <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub> , 14H <sub>2</sub> O		Orth.	a=12.25Å	Z=2			JCPDS,22-23;Pov.,606;
DGEN			٠	b=13.95Å				Hölzel,128;RRW,395;Str.Tab.,
				c=15.95Å				284.
-noio-	(Ca,Na,Ba)U <sub>2</sub> O <sub>7</sub> .		خ	خ				Am.Min., 1973, <u>58</u> , 1111(Abs.);
RANOITE 2H2O								Holzel,89.
METAHEWETTITE CaV <sub>6</sub> O <sub>16</sub> .3H <sub>2</sub> O	-	Ca <sup>o</sup> V <sub>6</sub> <sup>[309/]</sup> [O <sub>16</sub> (H <sub>2</sub> O) <sub>3</sub> ]	Mon.	a=12.15Å	β=118°2′			Min.Mag.,1979,43,550;Pov.,
		(≈Barnesite)	A2/m	b=3.607Å	Z=2			500-501;Str.Tab.,223;SR,27,
$\neg \neg$				C=18.44A				589-590; Holzel,88;RRW,397.
METAKÖTTIGITE   (Zn,Fe) <sub>3</sub> (AsO <sub>4</sub> ) <sub>2</sub> .			Tric.	a=7.96Å	α=95.6°			Am.Min., 1983, 68, 1039(Abs.);
3(H <sub>2</sub> O,C		[O <sub>8</sub> (H <sub>2</sub> O,OH) <sub>8</sub> ]	ъ- ::	b=9.44Å	β=97.0°			Hölzel,160.
		(≈Symplesite)		c=4.72Å	γ=107.8° Z=?			
METAROSSITE Ca(VO3), 2H3O		Ca <sup>acb</sup> V, [3by][O <sub>6</sub> (H <sub>2</sub> O) <sub>2</sub> ] Tric.	Tric.	a=6.21Å	α=92°58'	Ca(2i) V <sub>I-II</sub> (2i)		SR,24,445-446;Pov.,499-500;
,			ът. .:	b=7.06Å	B=96°39'	O <sub>I-VIII</sub> (2i)		Str. Tab., 222; RRW, 398; Hölzel,
				c=7.76Å	γ=105°47° Z=2			.88
METASCHODERI- AI(PO4,V	AI(PO4, VO4).3H2O		Mon.	a=11.4Å	β=79°			Am.Min., 1962, 47, 637-648;
<u> </u>			P2/m	b=14.9Å	S=8		,	RRW, 399; Pov., 496; Str. Tab.,
				c=9.2Å				334;Hölzel,161.
METASWITZERI- (Mn,Fe) <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> .		(Mn,Fe) <sub>3</sub> P <sub>2</sub> <sup>1</sup>	Mon.	a=8.496Å	β=96.65°			Min.Abs.,81-1248;K/B,85-87;
<b>TE</b> 4H <sub>2</sub> O		[O <sub>8</sub> (H <sub>2</sub> O) <sub>4</sub> ]	P2 <sub>1</sub> /c	b=13.173Å	Z=8			Am.Min.,1967, <u>52</u> ,1595-1602;
$\dagger$		(≈Ludiamine)		C=17.214A	1	1770		A. M. M. 4060 45 4006 4064:
MEI AVANDEN- PBU-7022.nH20	2.nH <sub>2</sub> O		Orth.	a=14.0/A	¿=7	AI(4e) P(4e)	-	Am.Min., 1900, 43, 1020-1001,
			<u> </u>	c=43.33Å		Q::v(4e) H <sub>2</sub> O::i(4e)		225;Hölzel,90.

NAME	CHEMICAL	STRUCTURAL	SPACE GROUP	UNIT CELL DIMENSIONS	MENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
METAVARISCITE	AIPO4.2H <sub>2</sub> O	(H,O),{3∞}[Al°P'O <sub>4</sub> ]	Mon.	a=5.178Å	β=90.35°	AI(4e) P(4e)	Dist.deriv.	Acta Cryst.,1973, <u>B29</u> ,2292-
			P2 <sub>1</sub> /n	b=9.514Å c=8.454Å	Z=4	O <sub>I-IV</sub> (4e) H <sub>2</sub> O <sub>I-II</sub> (4e)	(H₂O)₂{3∞}[Al°P'O₄] VARISCITE	2294;SR,31A,185-187;SR, 39A,285-286LF,282;RRW,402.
MIRABILITE	Na <sub>2</sub> SO <sub>4</sub> .10H <sub>2</sub> O	Na <sub>2</sub> °S'[O <sub>4</sub> (H <sub>2</sub> O) <sub>10</sub> ]	Mon. P2,/c	a=11.512Å β=107.789° b=10.370Å Z=4	3=107.789° Z=4	Na <sub>I-II</sub> (4e) S(4e)		Acta Cryst.,1978, <u>B34</u> ,3502- 3510;Pov.,593;Str.Tab.,291;
			•	c=12.847Å				RRW,408-409;LF,318.
MITSCHERLICHI-	K <sub>2</sub> CuCl <sub>4</sub> .2H <sub>2</sub> O	Cu <sup>o</sup> [K <sub>2</sub> <sup>co</sup> Cl <sub>4</sub> (H <sub>2</sub> O) <sub>2</sub> ]	Tet.	a=7.46Å	Z=2			Pov.,642;Str.Tab.,163;RRW,
MONOLVODO.	- 1		Trio	0=10 R2&	7=0			Sov Phys Cryst 1964 9 88-90
CALCITE	CaCO3.T2O		P3,21	C=7.54Å	ß. 7			Am.Min., 1964, 49, 1151 (Abs.);
								Am.Min.,1973, <u>58</u> ,1102(Abs.); Pov.,618;RRW,415.
MOORHOUSEITE	(Co,Ni,Mn)SO4.	(Co,Ni,Mn)°S¹	Mon.	a=10.032Å	β=98.37°	Co <sub>1</sub> (4a) Co <sub>11</sub> (4e)		Acta Cryst., 1962, 15, 1219-
		[O <sub>4</sub> (H <sub>2</sub> O) <sub>6</sub> ] (=Hexahydrite)	CZ/c	b=7.233A c=24.261Å	Z=8	S(81) O <sub>I-X</sub> (81)		1224;KKW,418;P0V.,591-59Z; Str.Tab.,282.
MORENOSITE	NISO4.7H2O	Ni°S'[O <sub>4</sub> (H <sub>2</sub> O) <sub>7</sub> ]	Orth.	a=11.86Å	Z=4			RRW,419;Pov.,592;Str.Tab.,
		(=Epsomite)	P2,2,2,	b=12.08Å c=6.81Å				283;Min.Mag.,1964, <u>33,</u> 1110- 1113:LF.313.
MOUNTAINITE	(Ca.Na,Ka),SiaO10.	(Ca,Na <sub>2</sub> ,K <sub>2</sub> ), <sup>[6]</sup> (H <sub>2</sub> O) <sub>3</sub>	Mon.	a=13.51Å	B=104°			Enc.Min.Nam., 205; RRW, 422;
	.3H <sub>2</sub> O	{2∞}[Si₄ <sup>t</sup> O₁0]		b=13.10Å	Z=8			Pov.,434;Str.Tab.,487;Hölzel,
				20.01				100 000 000 000
MUNIRITE	NaVO <sub>3</sub> .1.9H <sub>2</sub> O		Mon.	a=16.756A	β=111.18°			MIn.Mag.,1988, <u>32</u> ,716-717.
			P 2 1/8	0=3.6381A c=8.023Å	<b>6=7</b>			Am.Min., 1984, 69, 812 (Abs.);
MUSKOXITE	Mg7Fe4O <sub>13</sub> .10H <sub>2</sub> O		Trig.	a=3.1Å	¿ =Z			Am.Min., 1969, 54, 684-696;
			<i>د</i>	c=24.113Å?				RRW,424;Pov.,333;Hölzel,83, suppl
NATRON	Na <sub>2</sub> CO <sub>3</sub> .10H <sub>2</sub> O	[{g}][Na <sub>2</sub> °(H <sub>2</sub> O) <sub>10</sub> ]	Mon.	a=12.83Å	23.00	Na <sub>I-II</sub> (4a) C(4a)	[ {g} [Na <sub>2</sub> °(H <sub>2</sub> O) <sub>10</sub> ]	Acta Cryst., 1969, <u>B25, 2656</u> -
		{@}[C:O3],]	ဗိ	b=9.026A c=13.44Å	Z=4	O <sub>I-x</sub> (4a)	(g)(C'O3 7) NATRON	2658;LF,188;KKW,428;Pov., 618;Str.Tab.,245.
NEKOITE	Ca <sub>3</sub> Si <sub>6</sub> O <sub>15</sub> .7H <sub>2</sub> O	Ca <sub>3</sub> °(H <sub>2</sub> O) <sub>7</sub>	Tric.	a=7.588Å	$\alpha$ =111.77°	Ca <sub>I-III</sub> (1a)		Am.Min., 1980, 65, 1270-1276;
		{2∞}[Sie'O₁5]	<u> </u>	b=9.793A	β=103.50	Sil-vi(18)		POV., 454-455, 135, SII. 18D., 424 RRW 432 SR 46A 389
				C=7.338A	γ=80.33° Z=1	-XV(19)		
NEOTOCITE	(Mn,Fe)SiO <sub>3</sub> .H <sub>2</sub> O		Amorph.					Min. Abs., 83-2626; Min. Mag., 1978 42, 279-280; RRW 432-
								433;Hölzel,222.
NESQUEHONITE	MgCO <sub>3</sub> .3H <sub>2</sub> O	Mg <sup>o</sup> (H <sub>2</sub> O) <sub>3</sub> {g}[C <sup>1</sup> O <sub>3</sub> ]	Mon.	a=7.705Å	β=90.45°	Mg(4e) C(4e)		Acta Cryst., 1972, <u>B28</u> , 1031-
			7 <b>2</b> 1/11	D=5.36/A C=12.121Å		(a+)i/-iO		617-618;Str.Tab.,244;RRW,
	-							433.

NAME	CHEMICAL FORMULA	STRUCTURAL FORMULA	SPACE	UNIT CELL DIMENSIONS	MENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
EXA-		(Ni,Mg,Fe)°S¹	Mon.	a=9.880Å	β=98.38°	Ni <sub>1</sub> (4a) Ni <sub>11</sub> (4e)		Acta Cryst., 1988, C44, 1869-
HYDRITE		[O <sub>4</sub> (H <sub>2</sub> O) <sub>6</sub> ]	C2/c	b=7.228Å	Z=8	S(8f) O <sub>I-x</sub> (8f)		1873;Pov.,591-592;Str.Tab.,
		(=Hexanydrite)		C=24.130A				262,KKW,435.
NINGYOITE	(U,Ca,Ce) <sub>2</sub> (PO <sub>4</sub> ) <sub>2</sub> .		orth.	a=6.78Å	Z=3			Am.Min., 1959, 44, 633-650;
	1-2H <sub>2</sub> O		P222	b=12.10A				RRW,437;Pov.,546;Str.Tab., 314
NITROCALCITE	Ca(NO <sub>3</sub> ), 4H,O		Mon.	a=6 278Å	B=106 22ª	Ca(4e) N(4e)		Acta Cryst1977.B33.1861-
	7: 7/6		P2,/c	b=9.1551Å	Z=4	OLYI(4e)		1866:RRW.439:Hölzel.96.
				c=14.8999Å				
NITROMAGNESI-	Mg(NO <sub>3</sub> ) <sub>2</sub> .6H <sub>2</sub> O	Mg°(H <sub>2</sub> O) <sub>6</sub> (g){N <sup>17</sup> O <sub>3</sub> ] <sub>2</sub>	Mon.	a=6.194Å	β=92.99°			Acta Cryst., 1961, 14, 1296-
<b>3</b> L			P2 <sub>1</sub> /c	b=12.707Å c=6.600Å	Z=2			1297;Pov.,633-634;RRW,439.
OKENITE	Ca <sub>10</sub> Si <sub>18</sub> O <sub>46</sub> .18H <sub>2</sub> O	Ca <sub>10</sub> (H <sub>2</sub> O) <sub>18</sub> O	Tric.	a=9.69Å	α=92.7°	Ca <sub>i-IV</sub> (2i)		Am.Min., 1983, 68, 614-622;
		{2∞}[Si <sub>6</sub> O <sub>15]3</sub>	<u>-</u>	b=7.28Å	β=100.1°	Cav.vi(2i)		Pov., 434; Str. Tab., 424; Hölzel,
		(≈Nekoite)		c=22.02Å	γ=110.9° Z=1	(½ occ.) Si <sub>-ix</sub> (2i)		220.
ORICKITE	CuFeS <sub>2</sub> .nH <sub>2</sub> O		Hex.	a=3.695Å	Z=4			Am.Min., 1983, 68, 245-254;
			2	c=6.16Å				Hölzel,26.
PARACOQUIMBI- Fe <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub> .9H <sub>2</sub> O	Fe <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub> .9H <sub>2</sub> O	Fe <sub>2</sub> °S <sub>3</sub> <sup>1</sup> [O <sub>12</sub> (H <sub>2</sub> O) <sub>9</sub> ]	Trig.	a=10.926Å	Z=12	Fe <sub>1</sub> (3a) Fe <sub>11</sub> (3b)		Am.Min.,1971, <u>56</u> ,1567-1572;
<u>_</u>			יי צ	C=51.300A		relii-v(oc)		OK, 3/A, 508, POV., 585, Str. 1 ab.,
						Si-II(18f) (rh. descrip.)		Z84;KKW,458-459.
PARAHOPEITE	Zn <sub>3</sub> (PO <sub>4)2</sub> .4H <sub>2</sub> O	Zn <sup>o</sup> Zn <sup>2</sup> ,P <sub>2</sub> ,[O <sub>8</sub> (H <sub>2</sub> O) <sub>4</sub> ]	Tric.	a=5.757Å	α=93°32'	Zn <sub>1</sub> (1a) Zn <sub>11</sub> (2i)		Min.Mag., 1968, 36, 621-624;
			<u>т</u>	b=7.534Å	β=91°18'	P(2i) O <sub>I-IV</sub> (2i)		Pov.,532-533;Str.Tab.,333;SR,
				c=5.625Å	γ=91°33′ Z=1			33A, 395;SR, 41A, 425.
PARASYMPLESI-	Fe <sub>3</sub> (AsO <sub>4</sub> ) <sub>2</sub> .8H <sub>2</sub> O	Fe <sub>3</sub> As <sub>2</sub> [O <sub>8</sub> (H <sub>2</sub> O) <sub>8</sub> ]	Mon.	a=10.25Å	β=103°50′			Pov., 753, 523; LF, 307; Wyckoff,
2		(=Vivianite)	C2/m	b=13.48Å c=4.71Å	Z=2			3,852-854;RRW,463;Str.Tab., 335.
PASCOITE	Ca <sub>3</sub> V <sub>10</sub> O <sub>28</sub> .17H <sub>2</sub> O	Ca <sub>3</sub> <sup>I7J</sup> V <sub>10</sub> °	Mon.	a=16.834Å	β=93°8′	Ca <sub>1</sub> (2a) Ca <sub>11</sub> (4c)		Acta Cryst.,1966, <u>21</u> ,397-405;
		[O <sub>28</sub> (H <sub>2</sub> O) <sub>17</sub> ]	12	b=10.156Å	Z=2	:		SR,31A,142-143;Pov.,502;Str.
	- 1			c=10.921Å				Tab.,221;Hölzel,88.
PAULINGITE	(K,Ca,Na,Ba) <sub>12</sub>	(K,Ca,Na,Ba) <sub>12</sub>	Cub.	a=35.093Å	Z=28	(Si,Al) <sub>I-II</sub> (48i)		SR,50A,333-334.Am.Min.,
		(H <sub>2</sub> O) <sub>25</sub>	l m3m			(Si,Al) <sub>III-VIII</sub> (96I)		1960,45,79-91;Am.Min.,1982,
		[3∞][(Si,Al) <sub>24</sub> 'O <sub>48</sub> ] (≈Sodalite,Zeolite)				:		67,799-803;Pov.,353.
PENTAHYDRITE	MgSO <sub>4</sub> .5H <sub>2</sub> O	Mg°S'[O <sub>4</sub> (H <sub>2</sub> O) <sub>5</sub> ]	Tric.	a=6.314Å	α=81°7'	Mg <sub>1</sub> (1a) Mg <sub>11</sub> (1e)		Acta Cryst., 1972, <u>B28</u> , 1448-
			_	b=10.505A	β=109°49	SI(ZI) OIV(ZI)		1455; POV., 581; Str. 18D., 261;
				c=6.030A	γ=105°5′ Z=2			KKW,4/1,LF,31/.

NAME	CHEMICAL	STRUCTURAL FORMULA	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
PHAUNOUXITE	O Y	{2∞}[Ca <sup>[8]</sup> Ca <sub>2</sub> <sup>[7]</sup> As₂¹ O <sub>8</sub> (H₂O)₁₁]	Tric. P 1	a=12.563Å b=12.181Å	$\alpha$ =88.94° $\beta$ =91.67°	Са <sub>і-ііі</sub> (2і) As <sub>і-іі</sub> (2і) О <sub>і-Vііі</sub> (2і)		Acta Cryst.,1983, <u>B39</u> ,4-10;Am. Min.,1983, <u>68</u> ,850(Abs.);
		(≈Rauenthalite)		c=6.205Å	γ=113.44° Z=2	:		Hölzel, 165.
PHOSPHOFERRI-	(Fe,Mn) <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> .	(Fe,Mn) <sub>3</sub> °P <sub>2</sub> °C	Orth.	a=9.460Å	Z=4			SR,42A,346-347;Min.Mag.,
<u>ц</u>	ر ا	[C8(⊓2C)3] (≈Reddingite)	<u> </u>	c=8.670Å				Tab.,331;RRW,477.
PHOSPHOSIDERI- FePO4.2H2O	FePO <sub>4</sub> .2H <sub>2</sub> O	(H <sub>2</sub> O) <sub>2</sub> {3∞}[Fe°P'O <sub>4</sub> ]	Mon.	a=5.30Å	β=90°36'	Fe(4e) P(4e)	Dist.deriv.	Am.Min., 1966, <u>51</u> , 168-176;
2		(=Metavariscite)	P2 <sub>1</sub> /n	b=9.77A c=8.73Å	7=4	O <sub>I-VI</sub> (4e)	(H₂O)₂{3∞}[Al⁻PO₄] VARISCITE	Tab.,331.
POITEVINITE	(Cu,Fe,Zn)SO4.	{3∞}[(Cu,Fe,Zn)°	Tric.	a=5.120Å	$\alpha = 107.06^{\circ}$	(Cu,Fe,Zn)(1a)	Dist.deriv.	Can.Min., 1994, 32, 873-884;
	H <sub>2</sub> 0	S <sup>(</sup> O <sub>4</sub> (H <sub>2</sub> O)]	<u>С</u>	b=5.160Å	β=107.40	(Cu,Fe,Zn)(1h)	[(O <sup>2</sup> H) <sup>7</sup> O <sup>4</sup> (H <sup>2</sup> O)]	RRW,486-487;Pov.,590;Str.
				c=7.535Å	γ=92.73° Z=2	S(ZI)	KIESERITE	l ab.,z80;EncycMiner.Nam., 242.
QUENSTEDTITE	Fe <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub> .11H <sub>2</sub> O	Fe <sub>2</sub> °S <sub>3</sub> <sup>1</sup> [O <sub>12</sub> (H <sub>2</sub> O) <sub>11</sub> ]	Tric.	a=6.184Å	α=94.18°	Fe <sub>I-II</sub> (2i) S <sub>I-III</sub> (2i)		Am.Min., 1974, 59, 582-586;
			<b>ل</b>	b=23.60Å	$\beta = 101.73^{\circ}$	O <sub>I-XII</sub> (2i)		Pov., 593; Str. Tab., 284; SR, 40A,
				c=6.539Å	γ=96.27° Z=2	(H <sub>2</sub> O) <sub>I-x</sub> (2i)		265;RRW,505-506.
RALSTONITE		(AI,Mg) <sub>2</sub> <sup>cb</sup> Na <sub>0.4</sub> <sup>[6]</sup> □ <sub>1.6</sub> <sup>[6]</sup>	Cub.	a=9.87Å	Z=8	(AI,Mg)(16c)		SB, <u>7</u> , 127-128; LF, 140; RRW,
	(F,OH) <sub>6</sub> .H <sub>2</sub> O	[(F,OH) <sub>6</sub> (H <sub>2</sub> O)□] <sup>0</sup>	Fd 3m			Na(16d)		507-508;Min.Abs.,85M/0180.
		(Defect d.Pyrochlore)				(H <sub>2</sub> O)(8b) (F,OH)(48f)		
RANCIFITE	(Ca Mn)Mn,O		Hex.	a=2.86Å		(A.000.)		Min.Abs804-854;Am.Min.,
	3H <sub>2</sub> O		~	c=7.50Å				1987,72,230(Abs.);Bull.Min.,
	4			Z=2		-		1969,92,191-195; Pov.,333.
RAUENTHALITE	Ca <sub>3</sub> (AsO <sub>4</sub> ) <sub>2</sub> .10H <sub>2</sub> O	Ca <sup>ISI</sup> Ca <sub>2</sub> <sup>I7I</sup> As <sub>2</sub> <sup>t</sup>	Tric.	a=12.564Å	α=89.09°	As <sub>I-II</sub> (2i)		Acta Cryst., 1983, <u>B39</u> , 4-10;
		[O <sub>8</sub> (H <sub>2</sub> O) <sub>10</sub> ]	<b>Т</b>	b=12.169Å	β=79.69°	Ca <sub>l-III</sub> (2i)		Pov.,520;Am.Min.,1965,50,805
		(≈Phaunouxite)		c=6.195Å	γ=118.58° Z=2	O <sub>1-VIII</sub> (21) (H <sub>2</sub> O) <sub>1-x</sub> (21)		-800
REDDINGITE	Mn <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> .3H <sub>2</sub> O	Mn <sub>3</sub> °P <sub>2</sub> <sup>1</sup> [O <sub>8</sub> (H <sub>2</sub> O) <sub>3</sub> ]	Orth.	a=9.49Å	Z=4			RRW,512;Hölzel,159;Pov.,755,
		(≈Phosphoferrite)	Pbna	b=10.08Å				547;Str.Tab.,331;Zeit.Krist.,
				c=8.70Å				1963,118,327-331.
RETGERSITE	α-NiSO <sub>4</sub> .6H <sub>2</sub> O	Ni°S'[O4(H2O)6]	Tet.	a=6.780Å	Z=4	Ni(4e) S(4e)		Acta Cryst., 1988, C44, 1869-
		(≈Hexahydrite)	P4 <sub>1</sub> 2 <sub>1</sub> 2	c=18.285A		O <sub>-V</sub> (8g)		1873;KKW,514;P0v.,591;Sfr. Tab.,282.
REVDITE	Na <sub>2</sub> Si <sub>2</sub> O <sub>5</sub> .5H <sub>2</sub> O	3∞[Na2°Si2¹O5(H2O)5]	Mon.	a=53.83Å	β=96.78°	Si <sub>I-VIII</sub> (4c)		Sov. Phys. Cryst., 1992, 37,632-
		(≈Vlasovite)	C2	b=9.972A c=6.907Å	Z=16			636;Am.Min.,1982, <u>67</u> ,1076; Hölzel,226.

	TOKALIL A	FORMULA	GROUP	<b>UNIT CELL DIMENSIONS</b>	MENSIONS	POSITIONS	STRUCTURE TYPE	REFERENCES
RHABDOPHANE - (C	(Ce Ja)PO, H <sub>2</sub> O	Į,	Hex	a=6.98Å	Z=3			RRW,515;Pov.,546-547;Str.
- (Ce)	7		P6 <sub>2</sub> 22	c=6.39Å	l			Tab.,314;Am.Min.,1980, <u>65,</u> 1085/Abs \ Hölzel 164
RHABDOPHANE - (L	(La,Ce)PO <sub>4</sub> .H <sub>2</sub> O	(La,Ce)[ <sup>18]</sup> P <sup>1</sup> [O <sub>4</sub> (H <sub>2</sub> O)]	Hex.	a=6.960Å	Z=3			Min.Mag.,1984,48,146-148;
<u>(E</u>			P6 <sub>2</sub> 22	c=6.372Å				Hölzel,164.
RHABDOPHANE - (P	(Nd,Ce,La)PO4. H <sub>2</sub> O	(Nd,Ce,La) <sup>[8]</sup> P <sup>1</sup> [O <sub>4</sub> (H <sub>2</sub> O)]	Hex. P6 <sub>2</sub> 22	a≈6.98Å c≈6.39Å	Z=3			Hölzel, 164; Am. Min., 1966, <u>51,</u> 152-158.
RICHETITE	PbU <sub>4</sub> O <sub>13</sub> .4H <sub>2</sub> O		Tric.	a=20.81Å	α=103.8°			Am.Min.,1985,70,1335(Abs.);
			<u>Z</u> ::	b=12.06Å	β=115.1°			Hölzel,89.
				c=16.30A	γ=90.4° Z=9			
RÖMERITE	Fe <sub>3</sub> (SO <sub>4</sub> ) <sub>4</sub> .14H <sub>2</sub> O	[{g}[Fe°S2'O8(H2O)4]2	Tric.	a=6.463Å	α=90°32′	Fe <sub>1</sub> (1a) Fe <sub>11</sub> (2i)		Am.Min., 1970, 55, 78-89; RRW,
		(g)[Fe°(H <sub>2</sub> O) <sub>6</sub> ]	Ъ.	b=15.309Å	β=101°5′	S <sub>I-II</sub> (2i)		523;Pov.,596;Str.Tab.,285;SR,
				c=6.341Å	7=85°44' Z=1			35A,439.
ROSSITE	Ca(VO <sub>3</sub> ) <sub>2</sub> .4H <sub>2</sub> O	{3∞}[Ca <sup>(8)</sup> V <sub>2</sub> <sup>(5)</sup> O <sub>6</sub>	Tric.	a=8.534Å	$\alpha = 101^{\circ}32^{\circ}$	Ca(2i) V <sub>I-II</sub> (2i)		SR,28,204-206;Min.Mag.,
		(H <sub>2</sub> O)4]	٦,	b=8.556Å	β=114°58'	O <sub>!-x</sub> (2i)		1985;49,140-141;Pov.,499-
		S-1		c=7.015Å	γ=103°23° Z=2			500;Str.Tab.,222;RRW,527- 528.
ROZENITE	FeSO <sub>4</sub> .4H <sub>2</sub> O	Fe <sup>o</sup> S <sup>1</sup> [O <sub>4</sub> (H <sub>2</sub> O) <sub>4</sub> ]	Mon.	a=5.97Å	8=90°26'	Fe(4e) S(4e)		Acta Cryst., 1962, 15, 815-826;
		(=Laumontite)	P2 <sub>1</sub> /n	b=13.64Å	Z=4	O <sub>I-VIII</sub> (4e)		RRW,528;Pov.,602;Str.Tab.,
				c=7.97Å				281.
SCHIEFFELINITE P	Pb(Te,S)O <sub>4</sub> .H <sub>2</sub> O		orth.	a=9.67Å	Z=16			Min.Mag.,1980,43,771-773;
			Cmam	b=19.56A c=10.47Å				Holzel, 126.
SCHÖLLHORNITE Na <sub>0.3</sub> CrS <sub>2</sub> .H <sub>2</sub> O	la <sub>0.3</sub> CrS <sub>2</sub> .H <sub>2</sub> O		Trig. R3m	a=3.32Å c=26.6Å	¿=Z			Am.Min.,1985, <u>70</u> ,638-643; Hölzel,126.
SCHUBNELITE F	FeVO <sub>4</sub> .H <sub>2</sub> O		Tric.	a=6.59Å	α=125°			Bull.Min.,1970,93,470-475;
			7	b=5.43Å	β=104°			Am.Min.,1972,57,1556-1557;
				c=6.62Å	γ=84°43' Z=2			F0V.,480,7KKV,047.
SCORODITE	FeAsO4.2H <sub>2</sub> O	(H <sub>2</sub> O) <sub>2</sub> (3∞)[Fe <sup>2</sup> As <sup>4</sup> O <sub>4</sub> ] Orth.	Orth.	a=8.937Å	Z=8	Fe(8c) P(8c)	(H2O)2{300}[Al°P'O4]	Acta Cryst., 1976, <u>B32</u> , 2891-
		The area of 17/17/17	Pcab	b=10.278Å		O <sub>I-VI</sub> (8c)	VARISCITE	2892;LF,282;SR, <u>12,</u> 251-252;
				C=9.996A		(H <sub>2</sub> O) -  (8C)		F0V., 500, 501. 1 ab., 532, KKVV, 548;.
SIDEROTIL (F	(Fe,Cu)SO <sub>4</sub> .5H <sub>2</sub> O	(Fe,Cu)°S'[O <sub>4</sub> (H <sub>2</sub> O) <sub>5</sub> ]	Tric.	a=6.26Å	α=97°15'			RRW,560;Pov.,591;Str.Tab.,
		(=Chalcanthite)	Г-	b=10.63A	$\beta = 109^{\circ}40^{\circ}$			Z81;LF,317;H0/Z81,127.
				C=6.06A	γ=/5°0° Z=2			
SIMONKOLLEITE	Zn <sub>5</sub> (OH) <sub>8</sub> Cl <sub>2</sub> .H <sub>2</sub> O		Trig. R 3m	a=6.334Å c=23.58Å	Z=3			Am.Min.,1988, <u>73</u> ,194-195 (Abs.);Hölzel,53.

NAME	CHEMICAL	STRUCTURAL	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT	STRUCTURE TYPE	REFERENCES
SIMPLOTITE	CaV4O0.5H5O		Mon.	a=8.39Å	B=90°25'			Am.Min., 1958, 43, 16-24; RRW,
	7		A2/m	b=17.02Å	Z=4			562;Pov.,328,602;Str.Tab.,
				c=8.37Å				221; Hölzel,87.
STARKEYITE	MgSO <sub>4</sub> .4H <sub>2</sub> O	{g}[Mg <sub>2</sub> °S <sub>2</sub> 'O <sub>8</sub> (H <sub>2</sub> O) <sub>8</sub> ]	Mon.	a=5.922Å	β=90°51'	Mg(4e) S(4e)		Acta Cryst., 1964, 17,863-869;
			P2 <sub>1</sub> /n	b=13.604Å	Z=4	O <sub>I-IV</sub> (4e)	-	RRW,577;Pov.,759,602;Str.
				c=7.905A				1 ab.,281;Zeft.Krist.,1998; <u>213;</u> 141-150
			100	1010	0-444040			Min Abc 88M 1038:Dov 408:
STEIGERITE	AIVO4.3H2O		Mon. P2./m	8=11.840A	β=111710 7=2			Str. Tab. 334:RRW.577-579:
				c=11.040Å	1			Hölzel, 161; Am. Min., 1959, 44,
			_					322-341.
STERLINGHILLI-	Mn <sub>3</sub> (AsO <sub>4</sub> ) <sub>2</sub> .4H <sub>2</sub> O		ے	ç				Am.Min., 1981, 66, 182-184; Str.
<b>"</b>								Tab.,578;Hölzel,159.
STRACZEKITE	(Ca,K,Ba)V <sub>8</sub> O <sub>20</sub> .	V <sub>8</sub> °		a=11.679Å	$\beta = 100.53^{\circ}$			Min.Mag., 1984, 48, 289-293;
	3H2O	[O <sub>20</sub> (H <sub>2</sub> O) <sub>3</sub> (Ca,K,Ba)]	C2/m	b=3.6608Å	Z=1			Hölzel,177;Am.Min.,1990, <u>75,</u> 508-521
	0		4	210.000	7-0		L Cholores Cons	DDM 686:Dov 750-Str Tah
STRENGITE	FePO <sub>4</sub> .2H <sub>2</sub> O	(H <sub>2</sub> O) <sub>2</sub> (3∞)[Fe <sup>2</sup> FO <sub>4</sub> ]	Oran.	a=10.05A h=q q2Å	0=7		(H2O)2(3∞)[AI P O4]	332-1 E 282-Hölzel 161-Can
			2	C=8.74Å				Min., 1976, 14, 40-46.
SVETI OZARITE	(Ca K Na) (Si Al)	(Ca K Na)2(H2O)22	(Orth.)	a=19.482Å	Z=4			Am.Min., 1977, 62, 1060(Abs.);
	O48.12H <sub>2</sub> O		Ccma?	b=20.963Å				Min.Mag., 1982, 45, 157-161.
		(~Dachiardite,Zeolite)		c=7.554Å				
SWITZERITE	(Mn,Fe) <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> .	(Mn,Fe) <sub>3</sub> °P <sub>2</sub> <sup>c</sup>		a=8.528Å	0.05			Am.Min., 1986, 71, 1224-1228;
		[O <sub>8</sub> (H <sub>2</sub> O) <sub>7</sub> ]	P2 <sub>1</sub> /a	b=13.166Å	Z=4	P <sub>I-II</sub> (4e)		SR, 45A, 308; RRW, 594; Pov.,
				c=11.812Å		O <sub> -xv</sub> (4e)		547;Str.Tab.,333.
SYMPLESITE	Fe <sub>3</sub> (AsO <sub>4</sub> ) <sub>2</sub> .8H <sub>2</sub> O	Fe <sub>3</sub> As <sub>2</sub> [O <sub>8</sub> (H <sub>2</sub> O) <sub>8</sub> ]	Mon.	a=10.25Å	$\beta = 103^{\circ}50'$	Fe <sub>1</sub> (2a) Fe <sub>11</sub> (4g)		SR, 13, 307-308; RRW, 595;
		(=Vivianite)	C2/m	b=13.48Å	Z=2	As(4i)		Pov., 523; Str. Tab., 335; Wyckoff,
				c=4.71A				3,852-854.
SZMIKITE	MnSO <sub>4</sub> .H <sub>2</sub> O	[(O <sup>2</sup> H) <sup>5</sup> O <sub>2</sub> (M <sup>2</sup> O)]	Mon.	a=7.758Aβ=115°42.5	-115°42.5		Dist.deriv.	RRW,597;Str. Tab.,280;Holzel,
			A2/a	b=7.612A c=7.126Å	<b>7=7</b>		{3∞}[Mg°S'O₄(H₂O)] KIESERITE	126; Zeit. Knst., 1998, <u>213,</u> 141- 150.
SZOMOLNOKITE	FeSO <sub>4</sub> .H <sub>2</sub> O	{3∞}[Fe°S'O4(H2O)]	Mon.	a=7.624Å	β=115°52'		Dist.deriv.	RRW,598;Pov.,590;Str.Tab.,
			A2/a	b=7.468A	Z=4		(3∞)[Mg°S°O₄(H <sub>2</sub> O)]	280;Holzel,126.
THICONOCION	0 107 10 2110	L (O II) IOIO ONO	Trio	0=10.12BA		Ca(3a) Ma(6c)	אורסבואו ור	Acta Cryst 1980 B36 2738-
IACHTHTDRIFE	Calmg2Ci6. LZn2C	(≈Carnallite)	ည် က ဤက	c=17.318Å		CI(18f) O <sub>I-II</sub> (18f)		2739;SR,46A,173-174;Hölzel
				Z=3				suppl
TAKANELITE	(Mn,Ca)Mn <sub>4</sub> O <sub>9</sub> .H <sub>2</sub> O		Hex.	a=8.68Å	Z=3			Am.Min.,1971, <u>56</u> ,1487-1488 (Abs.):Pov. 760:RRW 600-601
	O IIC COLT	L.IGITAISIIN ALO.1	. Č	9=8 834 Å	7=4	Cu(4a) Te(4a)		SR 43A 292 27 635-637 RRW
	Cu   eC3.4720	(=Chalcomenite)	P2,2,2,	b=9.597Å		O <sub>I-V</sub> (4a)		607;Pov.,564-566;Str. Tab.,
				C=1.428A				ZZO, MIII. ADS., 70-130Z.

NAME	CHEMICAL	STRUCTURAL	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT	STRUCTURE TYPE	REFERENCES
TENGERITE - (Y)	Y,(CO3), 2H,O	2∞f Y, <sup>191</sup> {a}C <sup>t</sup> O <sub>3</sub> l <sub>3</sub>	Orth	a=6.078Å	Z=4	Y(4a) C <sub>(</sub> (8b)		Am.Min., 1993, 78, 425-432;
	3	(H <sub>2</sub> O) <sub>2</sub> ]	Bb2₁m	b=9.157Å		C <sub>II</sub> (4a)		Pov.,617;Hölzel,109;Min.Abs.,
		(≈Kimuraite)		c=5.114A				75-3580.
TERTSCHITE	Ca <sub>4</sub> B <sub>10</sub> O <sub>19</sub> .20H <sub>2</sub> O		Mon.	<i>د</i>				RRW,610;Pov.,483;Str.Tab., 259;Hölzel,116.
TETRANATROLI-	(Na,K) <sub>2</sub> (Si,Al) <sub>5</sub> O <sub>10</sub>	(Na,K)2 <sup>6</sup> (H <sub>2</sub> O) <sub>2</sub>	Tet.	a=13.074Å	2=4	Na(16e)		Zeit.Krist., 1989, 189, 191-194;
<b>1</b> E	.2H <sub>2</sub> O	{3∞}[(Si,Al)₅ <sup>t</sup> O₁₀] (≈Natrolite Zeolite)	1 <u>4</u> 2d	c=6.620Å		Si <sub>I-II</sub> (16e) (v. occ.)		Hölzel,243;Can.Min.,1980, <u>18,</u> 77-84.
THERMONATRITE Na2CO3.H2O	Na <sub>2</sub> CO <sub>3</sub> .H <sub>2</sub> O	Nate National (H2O)	Orth.	a=6.472Å	Z=4	Na <sub>I-II</sub> (4a) C(4a)		Acta Cryst.,1975, <u>B31</u> ,890-892;
		{a}{c_{O_3}}	P2 <sub>1</sub> ab	b=10.724Å c=5.259Å		O <sub>I-IV</sub> (4a) H <sub>I-II</sub> (4a)		RRW,613;Pov.,618;Str.Tab., 245.
TODOROKITE	(Na,Ca,K,Ba,Sr) <sub>1-x</sub>	(Mn,Mg,Al)	Mon.	a=9.764Å	β=94.06°	Mn <sub>1</sub> (1g) Mn <sub>11</sub> (2h)		Am.Min., 1988, 73,861-869; LF,
	(Mn, Mg, Al) <sub>6</sub> O <sub>12</sub> . 3-4H <sub>2</sub> O	[(Na,Ca,K,Ba,Sr) <sub>1-x</sub> O <sub>12</sub> (H <sub>2</sub> O) <sub>3-4</sub> ] <sup>ch</sup> (≈Hollandite)	E E	D=2.8416A c=9.551Å	Z=1?	Mn <sub>Iv</sub> (2n)		Tab.,200;LF,107.
TRABZONITE	Ca <sub>4</sub> Si <sub>3</sub> O <sub>10</sub> .2H <sub>2</sub> O		Mon.	a=6.895Å	β=98₀			Am.Min.,1988,73,1497(Abs.);
			P2 <sub>1</sub>	b=20.640Å c=6.920Å	Z=4			Hölzel, 204.
TRISTRAMITE	(Ca,U,Fe)	(Ca,U,Fe) <sup>[8]</sup> (P,S) <sup>[</sup>	Hex.	a=6.913Å	Z=3			Min.Mag.,1983,47,393-396;
	(PO4,SO4).2H <sub>2</sub> O	[O <sub>4</sub> (H <sub>2</sub> O)] (=Rhabdophane- -(Ce))	P6 <sub>2</sub> 22	c=6.422Å				K/B,175;Hölzel,175.
URANOSPHAERI- TE	Bi <sub>2</sub> U <sub>2</sub> O <sub>9</sub> .3H <sub>2</sub> O		Orth.	٤				Hőlzel,90;Pov.,333;Str.Tab., 226.
VANDENDRIESS-	PbU <sub>7</sub> O <sub>22</sub> .12H <sub>2</sub> O		Orth.	a=14.07Å	Z=36 ?			Am.Min., 1960, 45, 1026-1061;
CHEITE			Pmma	b=40.85Å				Pov.,327;Str.Tab.,225;RRW,
VADISCITE	O To Calv	1 Clack No. 10	5	0-45.33A	7=8	AI/RC) D/RC)	1. O'D' AND TANGET OF THE	Acta Covet 1977 B33 283-265
	AIT 04:4120	(12O)2(3∞)[A P O4]	Pbca.	b=8.561Å		O <sub>[-VI</sub> (8c)	VARISCITE	LF,282;RRW,648;SR,43A,251; Dov. 531-532;Str Tab, 331
VIVIANITE	Eo. (DO.), 8H.O	E 00 (O /U O) 1	Mon	0-10 1128	0-104 280			Can Min 1997 35 713-722 SR
	re3(rO4)2.0n2O	re3 r2[O6(n2O)8]	C2/m	b=13.464Å c=4.723Å	p=104.36			46A,327;LF,307;RRW,654; Pov.,558;K/B,66-67.
WARIKAHNITE	Zn <sub>3</sub> (AsO <sub>4</sub> ) <sub>2</sub> .2H <sub>2</sub> O	3∞[ Zn <sub>3</sub> [45/6]As₂ <sup>t</sup>	Tric.	a=6.710Å	$\alpha = 105.59^{\circ}$			SR,46A,341-342;Am.Min.,
		O <sub>8</sub> (H <sub>2</sub> O) <sub>2</sub> ]	<u>-</u>	b=8.989Å	β=93.44°			1980,65,408(Abs.);Hölzel,160.
				C=14.533A	γ=108.68° Z=4			
WÖLSENDORFI-	(Pb,Ca)U <sub>2</sub> O <sub>7</sub> .2H <sub>2</sub> O		Orth.	a=13.99Å	9=Z			Pov.,327;RRW,675;Str.Tab.,
2			C222	b=11.95A c=7.02Å				225;Holzel,89;Am.Min.,1957, 42,919(Abs.).
WOODRUFFITE	(Zn,Mn)Mn <sub>3</sub> O <sub>7</sub> .		Tet.	a=8.42Å	Z=2			Min.Mag.,1963,33,506-507;
	1-2H <sub>2</sub> O		<u>Ф</u>	c=9.28Å				Pov.,319; RRW,676;Hölzel,74; Am.Min.,1953,38,761-769.

NAME	CHEMICAL FORMULA	STRUCTURAL FORMULA	SPACE	UNIT CELL DIMENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
ZINC-		(Zn,Cu,Fe)°S	Mon.	a=14.07Å B=105°35'			Pov., 592-593; Str. Tab., 283;
- MELANTERITE		[O <sub>4</sub> (H <sub>2</sub> O) <sub>7</sub> ]	P2 <sub>1</sub> /c				RRW,687;Hölzel,127.
				c=11.04Å			
ZIRCOSULFATE Zr(SO4)2.4H2O	Zr(SO <sub>4</sub> ) <sub>2</sub> .4H <sub>2</sub> O		Orth.	a=25.92Å Z=1			Am.Min., 1966, 51, 529 (Abs.);
			Fddd	b=11.62Å			Pov., 590-591; Str. Tab., 284;
_				c=5.532Å			RRW,690;Hölzel,128.

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NAME	CHEMICAL	STRUCTURAL	SPACE	UNIT CELL DIMENSIONS	MENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
ACUMINITE	SrAIF (OH) HO	HO) BON STORY	Mon	a=13 223Å	R=111 610	Sr(8f) Al(8f)		Zeit.Krist1991.194.221-227:
	7( ) +	(H <sub>2</sub> O)]	C2/c	b=5.175Å	Z=8	O <sub>I-II</sub> (8f) F <sub>I-IV</sub> (8f)		Am.Min., 1988, 73, 1492 (Abs.).
		(«Tikhonenkovite)		c=14.251Å				
AFGHANITE	(Na,Ca,K) <sub>8</sub> (Si,AI) <sub>12</sub>	(Na,Ca,K) <sub>8</sub> <sup>[8]</sup>	Hex.	a=12.8013Å	₹ Z=85	Si <sub>I-IV</sub> (12d)		Eur.J.Min.,1997,9,21-30;Bull.
	O <sub>24</sub> (Cl,SO <sub>4</sub> ) <sub>3</sub> .nH <sub>2</sub> O	(CI,SO <sub>4</sub> ) <sub>3</sub> (H <sub>2</sub> O) <sub>n</sub>	P63mc	c=21.4119Å		Al <sub>I-IV</sub> (12d)		Min., 1968, 91, 34-42; Pov., 349;
		{3∞}[(Si,Al) <sub>12</sub> 'O <sub>24</sub> ] (≈Cancrinite.Zeolite)						Str.Tab.,482;Holzel,240;LF, 300
AFWILLITE	Ca <sub>3</sub> (SiO <sub>3</sub> ) <sub>2</sub> (OH) <sub>2</sub> .	{2∞}[Ca2 <sup>[7]</sup> Ca <sup>[6]</sup> Si2 <sup>t</sup> O <sub>6</sub>		a=16.278Å β=134.98°	3=134.98°	Ca <sub>I-III</sub> (4a)		Acta Cryst., 1976, <u>B32</u> , 475-480;
		(OH) <sub>2</sub> (H <sub>2</sub> O) <sub>2</sub> ]	ర	b=5.6321Å	Z=4	Si <sub>I-II</sub> (4a) O <sub>I-X</sub> (4a)		SR,42A,398;Pov.,435-436;Str. Tab, 379;RRW 5
ACDINIEDITE	0 (01)/43 03 //	- 1	4	2-14-04	7=18			Min Mag 1972 38 781-789
AGRINIERIE	(R <sub>2</sub> , Ca, Sr)(UO <sub>2</sub> )3O <sub>4</sub> .4H <sub>2</sub> O		Cmmm Cmmm	b=24.07Å c=14.13Å	91 = 7			RRW,5-6;Hölzel,89.
AKROCHORDITE	(Mn,Mg) <sub>5</sub> (AsO <sub>4</sub> ) <sub>2</sub>	(Mn,Mg)5°As2¹	Mon.	a=5.682Å	β=99.49°	(Mn,Mg) <sub>(</sub> (2a)		Am.Min., 1989, 74, 256-262;
	(OH)4.4H2O	[O <sub>8</sub> (OH) <sub>4</sub> (H <sub>2</sub> O) <sub>4</sub> ]	P2 <sub>1</sub> /c	b=17.627Å	Z=2	(Mn, Mg) <sub>11-111</sub> (4e)		Hölzel, 167;RRW,8;Am.Min.,
				c=6.832Å		As(4e)		1969, <u>53</u> ,1179(Abs.);Moore, 1995a,7-26.
AKSAITE	MgB <sub>6</sub> O <sub>7</sub> (OH) <sub>6</sub> .	Mg°(H <sub>2</sub> O) <sub>2</sub>	Orth.	a=12.540Å	Z=8	Mg(8c) B <sub>I-VI</sub> (8c)		Am.Min.,1971, <u>56</u> ,1553-1556;
		{g}[(B2'B")2O7(OH)6]	Ppca	b=24.327Å	•	O <sub>I-XV</sub> (8c)		RRW,8;Pov.,483;Str.Tab.,261;
		(≈VOIROVSRITE)		COO+. 1-0				A 11 O 12 40 20 DO 1 0 10 2
ALUMINITE	Al <sub>2</sub> SO <sub>4</sub> (OH) <sub>4</sub> .7H <sub>2</sub> O	(H <sub>2</sub> O) <sub>4</sub> [ Al <sub>2</sub> '(OH) <sub>4</sub>	Mon.	a=7.440A	β=110.18°	Al <sub>I-II</sub> (4e) S(4e)		Acta Cryst.,1978, <u>B34</u> ,240/-
		(H2O)3(B)(OZH)	F21/C	D=15.583A	<b>5=7</b>	Ci-xv(4e)		450:CD 44A 272:Zeit Kriet
				C=11./00A		1-XVIII(46)		1998,213,141-150.
AMARANTITE	Fe,O(SO <sub>4</sub> ),.7H,O	(H <sub>2</sub> O) <sub>8</sub> (1∞)[Fe, S, <sup>†</sup>	Tric.	a=8.976Å	∝=95.6°	Fe <sub>1-11</sub> (2i) S <sub>1-11</sub> (2i)		Zeit.Krist., 1968, <u>127</u> , 261-275;
	77/2	O-18(H-0), 12 12	1	b=11.678Å	B=90.36°	O <sub>I-XVI</sub> (2i)		Pov., 599; Str. Tab., 293; Hölzel,
				c=6.698Å	y=97.20°			134;Zeit.Krist.,1998, <u>213</u> ,141-
					7=7			
AMARILLITE	NaFe(SO <sub>4</sub> ) <sub>2</sub> .6H <sub>2</sub> O		Mon. P2/m ?	a=5.33A b=6.87A	β=95°37' 7=1			Hölzel, 130; Am. Min., 1936, <u>21,</u> 270-271 (Abs.).
				c=7.89Å				
AMMONIOBORI-	(NH4)3B15O20(OH)8		Mon.	a=25.27Å	B=94°17.5			Am.Min., 1959, 44, 1150-1158;
1	.4H <sub>2</sub> O		C2/c	b=9.65A c=11.56Å	Z=4			Pov.,479,158;Str.1ab.,259; RRW,19.
ANALCIME	Na(AISi <sub>2</sub> )O <sub>6</sub> .H <sub>2</sub> O	Na(H <sub>2</sub> O)	Cub.	a=13.73Å	Z=16	1/2Na(24c)	Na(H <sub>2</sub> O)	Zeit.Krist.,1972, <u>135</u> ,240-252;
(cubic)		{3∞}[Si <sub>2</sub> 'Al'O <sub>6</sub> ] (≈Sodalite:Zeolite)	l a3d			O(96h) (Si,Al)(48g)	{3∞}[Si₂¹Al¹O <sub>6</sub> ] ANALCIME (cubic)	SR,38A,361;Pov.,351;Str.Tab., 471;RRW,20;LF,293;285
ANALCIME	Na(AISi <sub>2</sub> )O <sub>6</sub> .H <sub>2</sub> O	Na(H <sub>2</sub> O)	Mon.	a=13.689Å	β=90.3Å	Na <sub>I-II</sub> (4e)	Dist.deriv. Na(H <sub>2</sub> O)	Zeit.Krist.,1988, <u>184</u> ,63-69.
(monoclinic)		{3∞}[Si <sub>2</sub> ¹Al'O <sub>6</sub> ]	C2/c	b=13.676Å	Z=16	1/2Na <sub>III-IV</sub> (8f)	{3∞}[Si₂'Al'O <sub>6</sub> ] ANALCIME (cubic)	
ANIADAITE		(~Soudille, Leolile)	Lin	0-10:000 0-6 447Å	2-101 B40		A TANK TO THE CORNER	SR 454 309 K/B 88-89 BRW
TI WALAIN	C4216(FO4)2.412O	30[Ca2 Te 72 Cg	_ - - - - - -		α=101.54°			21.Hölzel 163
		(D2D)4]	- L	0-0.0104	0=104.24°			£ 1,1 101£61, 160.
				C=5.898AZ=1y=/0./6	17= /U. /b"			

NAME	CHEMICAL	STRUCTURAL	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT	STRUCTURE TYPE	REFERENCES
AD IOUNITE		Mno Alo S.	Mon	2=6 198Å	B=100 28°	Mn(4e) Al. (4e)		Min.Mag., 1976, 40, 599-608;
	22H <sub>2</sub> O	[O <sub>16</sub> (H <sub>2</sub> O) <sub>22</sub> ] (=Halotrichite)	P2 <sub>1</sub> /c	4	Z=4	S <sub>I-IV</sub> (4e)		Hölzel,129.
ARHBARITE	Cu <sub>2</sub> (AsO₄(OH). 6H <sub>2</sub> O		Mon. ?	خ				Am.Min.,1983, <u>68</u> ,1038(Abs.); Hölzel,167.
ARMSTRONGITE	P Y	Ca°Zr° (H <sub>2</sub> O) <sub>2.5</sub> {2∞}[Si <sub>6</sub> O <sub>15</sub> ]	Mon. C2/m	a=14.04Å b=14.16Å c=7.81Å	β=109°33' Z=4	Zr(4c) Ca(4c) Si <sub>l-VI</sub> (4c)		Sov.Phys.Cryst.,1978, <u>23,</u> 539- 542;Am.Min.,1974, <u>59,</u> 208-212; SR.45A.368:Höizel.221.
ARSENBRACKE- BUSCHITE	Pb <sub>2</sub> (Fe,Zn)(AsO <sub>4)2</sub> . H <sub>2</sub> O	Pb <sub>2</sub> <sup>le/11</sup> (Fe,Zn)°As <sub>2</sub> <sup>t</sup> [O <sub>8</sub> (H <sub>2</sub> O)] («Brackebuschite)	Mon. P2/m	a=7.764Å b=6.045Å c=9.022Å	β=112.5° Z=2			Am.Min.,1978, <u>63,</u> 1289-1291 (Abs.);Min.Abs.,81-1245;SR, 44A, 263;Hölzel,163.
ARTINITE	Mg <sub>2</sub> CO <sub>3</sub> (OH) <sub>2</sub> . 3H <sub>2</sub> O	Mg2 <sup>2</sup> {g}{C"O <sub>3</sub> ](OH) <sub>2</sub> (H <sub>2</sub> O) <sub>3</sub>	Mon. C2/m	a=16.560Å b=3.153Å c=6.231Å	β=99.10° Z=2	Mg(4i) ½C(4i) 		Acta Cryst., 1977, <u>B33</u> ,3951- 3953;SR, <u>30A,</u> 408-409;SR, <u>43A,</u> 233-234;Pov.,620;Str. Tab.,247;RRW,38.
ASBOLANE	Mn(O,OH) <sub>2</sub> (Co,Ni,Ca) <sub>x</sub> (OH) <sub>2x</sub> . nH <sub>2</sub> O		Hex.	a=2.823Å c=9.34Å	ζ=Z			Am.Min.,1982 <u>,67</u> ,417-418; Hölzel,74.
BASALUMINITE	Al <sub>4</sub> SO <sub>4</sub> (OH) <sub>10</sub> .4H <sub>2</sub> O	Al <sub>4</sub> °S¹ [O <sub>4</sub> (OH) <sub>10</sub> (H <sub>2</sub> O) <sub>4</sub> ]	Mon. ?	a=14.857Å b=10.011Å c=11.086Å	β=122.28° Z=4			Min.Mag.,1980, <u>43</u> ,931-937; RRW,53;Str.Tab.,294;Pov., 728,737,599.
BAYLISSITE	K <sub>2</sub> Mg(CO <sub>3</sub> ) <sub>2</sub> .4H <sub>2</sub> O	K <sup>[5+3]</sup> Mg°(H <sub>2</sub> O) <sub>4</sub> {g}{C <sup>tr</sup> O <sub>3</sub> ] <sub>2</sub>	Mon. P2 <sub>1</sub> /n	a=11.404Å b=6.228Å c=6.826Å	β=99.66° Z=2	K(4e) Mg(2d) C(4e) O <sub>LV</sub> (4e)		SR <u>,44A</u> ,234-235;Min.Abs.,77- 2183;Hölzel,104.
BEARSITE	Be <sub>2</sub> AsO <sub>4</sub> (OH). 4H <sub>2</sub> O		Mon. C2/c	a=8.55Å b=36.90Å c=7.13Å	β=97°49' Z=12			Pov.,519;Str.Tab.,340;RRW, 57;Am.Min.,1963 <u>,48,</u> 210-211 (Abs.).
BERBORITE	Be <sub>2</sub> BO <sub>3</sub> (OH,F).H <sub>2</sub> O	{₃∞}{ Be₂¹B"O₃ (OH,F)(H₂O) ]	Trig. P3	a=4.43Å c=5.33Å	Z=1	B(1a) Be <sub>I</sub> (1c) Be <sub>II</sub> (1b) O <sub>I</sub> (3d) O <sub>II</sub> (1c) O <sub>III</sub> (1b)		N.Jb.Abh.,1990, <u>162,</u> 101-116; Pov.,469;Str.Tab.,253;Am. Min.,1968, <u>53</u> ,348-349(Abs.); RRW,61;HÖizel,112.
BERMANITE	Mn <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>2</sub> . 4H <sub>2</sub> O	Mn <sub>3</sub> °P <sub>2</sub> ' [O <sub>8</sub> (OH) <sub>2</sub> (H <sub>2</sub> O) <sub>4</sub> ]°	Mon. P2 <sub>1</sub>	a=5.446Å b=19.25Å c=5.428Å	β=110.29° Z=2	P <sub>I-II</sub> (2a) O <sub>I-VIII</sub> (2a) Mn <sub>I-III</sub> (2a)		Am.Min., 1976, <u>61,</u> 1241-1248; K/B,69-70;SR, <u>42A,</u> 344-345; Pov.,550;Str.Tab.,342;Hölzel, 170.
BETA-ROSELITE	Ca <sub>2</sub> (Co,Mg)(AsO <sub>4)2</sub> .2H <sub>2</sub> O		Tric. P 1	a=5.88Å b=7.67Å c=5.58Å	$\alpha = 112^{\circ}19^{\circ}$ $\beta = 71^{\circ}12^{\circ}$ $\gamma = 119^{\circ}41^{\circ}$ Z = 1			RRW,66-67;Bull.Min.,1960, <u>83,</u> 118-121.
BIKITAITE (triclinic)	LiAlSi <sub>2</sub> O <sub>6</sub> .H <sub>2</sub> O	3∞[Li¹Al⁵Si₂¹O <sub>6</sub> (H₂O)]	Tric.	ن				Encyc.Miner.Nam.,39.

NAME	CHEMICAL	STRUCTURAL	SPACE	UNIT CELL DIMENSIONS	MENSIONS	EQUIVALENT	STRUCTURE TYPE	REFERENCES
DIKITAITE .	I AISI, O. H.O	PORMOLA PARI PARE CO. (H. O)1	Mon	9=8 613Å	8=114.45	Li(2a) O <sub>LVII</sub> (2a)		Am.Min., 1974, 59, 71-78; RRW,
(monoclinic)	27.1.9020	1021 NO 20 12 12 12 12 12 12 12 12 12 12 12 12 12	<b>P2</b>	b=4.962Å	Z=2	(AI,SI) <sub>I-II</sub> (2a)		70;Pov.,346;Str.Tab.,470;SR,
				c=7.600Å		Si(2a)		40A,282;Hölzel,245.
BIRINGUCCITE	Na <sub>2</sub> B <sub>5</sub> O <sub>8</sub> (OH).H <sub>2</sub> O		Mon.	a=11.1955Å β=93.891°	β=93.891	Na <sub>I-IV</sub> (4e)		Am.Min., 1974, 59, 1005-1015;
	· · · · · · · · · · · · · · · · · · ·		P2 <sub>1</sub> /c	b=6.5607Å	Z=8	B <sub>I-x</sub> (4e)		SR, 40A, 218-219; Encyc. Miner.
				c=20.7566Å				Nam., 40; Holzel, 117.
BIRNESSITE	(Na,Ca,K)(Mg,Mn)	(Mg,Mn)°Mn <sub>6</sub> °	(Hex.)	a=5.175Å	$\beta = 103.18^{\circ}$			Am.Min., 1990, 75,477-489;
	Mn <sub>6</sub> O <sub>14</sub> .5H <sub>2</sub> O	O14(Na,Ca,K)(H2O)5]		b=2.850Å	Z=2			Hölzel, 74; Am. Min., 1988, 73,
		(≈Chalcophanite)	- 1	c=7.337A		100-14		7401-1404.
BLÖDITE	Na <sub>2</sub> Mg(SO <sub>4</sub> ) <sub>2</sub> .4H <sub>2</sub> O	Naz	Mon.	a=11.126A	β=100.84	β=100.84° Na(4e) Mg(2a)		Call.Mill., 1903, 23,009-074,
		{g}[Mg°S <sub>2</sub> 'O <sub>8</sub> (H <sub>2</sub> O) <sub>4</sub> ]	P2 <sub>1</sub> /a	b=8.242A c=5.539Å	Z=2	O <sub>I-VI</sub> (4e) S(4e) 		KKW, /0;F0V.,383,3K, <u>42</u> ,404.
BOGGSITE	Na <sub>3</sub> Ca <sub>8</sub> (Si,Al) <sub>96</sub>	Na <sub>3</sub> Ca <sub>8</sub> (H <sub>2</sub> O) <sub>70</sub>	orth.	a=20.236Å	Z=1	Si <sub>LVI</sub> (16j)		Am.Min., 1990, 75,501-507; Am.
		{3∞}[(Si,Al)₃6'O₁92] (Zeolite)	E E	c=12.798Å		O-vi(19J)		Hölzel suppl
BOLIVARITE	Al <sub>2</sub> PO <sub>4</sub> (OH) <sub>3</sub> .	(2000)	Amorph.					Can.Min., 1995, 33, 59-65; Min.
	4-5H <sub>2</sub> O							78.
BORAX	Na <sub>2</sub> B <sub>4</sub> O <sub>5</sub> (OH) <sub>4</sub>	[{g}[B2"B205(OH)4]	Mon.	a=11.885Å B=106.623°	3=106.623	Na <sub>1</sub> (4a) Na <sub>11</sub> (4e)	{g}{B <sub>2</sub> <sup>1</sup> B <sub>2</sub> O <sub>5</sub> (OH) <sub>4</sub> ]	Acta Cryst., 1978, B34, 3502-
	8H <sub>2</sub> O	{1∞}[Na <sub>2</sub> °(H <sub>2</sub> O) <sub>8</sub> ]	C2/c	b=10.654Å	Z=4		{1∞}[Na <sub>2</sub> °(H <sub>2</sub> O) <sub>8</sub> ] BORAX	3510;LF,219;Pov.,478;Str. Tab.,258.
POSTWICKITE	CaMn. Ci.O., 7H.O		0	2				Min.Mag.,1983,47,387-389;
	Carvilli6013016.71120		-	•				Hölzel, 190.
BOUSSINGAULTI- (NH4)2Mg(SO4)2.	(NH4)2Mg(SO4)2.		Mon.	a=9.383Å	β=107°03'	(NH4)(4e)		Acta Cryst., 1964, 17, 1478-
1	6H <sub>2</sub> O		P2 <sub>1</sub> /a	b=12.669A	Z=2	Mg(2a) S(4e)		596;Str.Tab., 289;RRW,83.
DDACKEDIICCUI			Mon	8-8 810Å	R=111030'	Ph(4c) V(4c)		Min.Mag., 1973, 39, 69-73; SR,
TE	H <sub>2</sub> O		P2 <sub>1</sub> /m	b=6.155Å	Z=2			19,451-453;Pov.,497;Str.Tab., 339;RRW,83-84.
RRAITSCHITE -	(Ca Na <sub>2</sub> ) <sub>7</sub> (Ce La) <sub>2</sub>		Hex.	a=12.156Å	Z=1			Am.Min., 1968, 53, 1081-1095;
(Ce)	B <sub>22</sub> O <sub>43</sub> .7H <sub>2</sub> O		٠	c=7.377Å				Pov.,487-488;Str.Tab.,262;
DOANIDITE	(Ma Ma)	October 11/10 BAD10	Mon	A S S S S S S S S S S S S S S S S S S S	R=0003U	Mn(2a) Ca(4e)		SR.16.289-292:Pov519-520;
	(AsO <sub>4</sub> ) <sub>2</sub> .2H <sub>2</sub> O	As <sub>2</sub> O <sub>8</sub> (H <sub>2</sub> O) <sub>2</sub> ]	P2 <sub>1</sub> /c	b=12.80Å	Z=2	As(4e) O <sub>I-IV</sub> (4e)		Str.Tab.,337,287;RRW;85.
		(=Kröhnkite)		c=5.65Å		(H <sub>2</sub> O)(4e)		
BRASSITE	Mg(AsO <sub>3</sub> OH).4H <sub>2</sub> O	L	Orth.	a=7.47Å	Z=8	As(8c) Mg(8c)		Acta Cryst., 1976, B32, 1460-
		[O <sub>3</sub> (OH)(H <sub>2</sub> O) <sub>4</sub> ]	Pbca	b=10.89A c=16.58Å		O <sub>I-IV</sub> (8c)		1466;SR,42A,363;Holzel,162; Am.Min.,1975,60,945(Abs.).
BREWSTERITE		(Sr,Ba,Ca) <sup>[9]</sup> (H <sub>2</sub> O) <sub>5</sub>	_	a=6.767Å	β=94.40°	1		Acta Cryst.,1985,C41,492-
	Ò <sub>16</sub> .5H <sub>2</sub> O	(300)[Al2'Si6'O16]	P2 <sub>1</sub> /m	b=17.455Å	Z=2	(AI,SI) <sub>I-IV</sub> (4f)		497;RRW,87;Pov.,353-354; SR,29,399-401.
		( <b>Z</b> EUIIIE)						

NAME	CHEMICAL FORMULA	STRUCTURAL	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
BRUSHITE	Ď	Caletzipt	Mon.	a=5.812Å	β=116.4°	Ca(4e) P(4e)		SR,37A,293,22,408-411,27,
		[O <sub>3</sub> (OH)(H <sub>2</sub> O) <sub>2</sub> ]	l 2/a	b=15.180Å	Z=4	O <sub>I-III</sub> (8fa) H(4e)		574;RRW,93;Pov.,557-558;
		(≈Gypsum)		c=6.239Å				Str.Tab.,339;Hölzel,165.
BUDDINGTONITE	(NH4)(Si <sub>3</sub> AI)O <sub>8</sub> .	(NH <sub>4</sub> )(H <sub>2</sub> O) <sub>0.5</sub>	Mon.	a=8.571Å	$\beta = 112^{\circ}44'$			Am.Min., 1964, 49, 831-850;
	0.5H <sub>2</sub> O	{3∞}[Si <sub>3</sub> <sup>t</sup> Al <sup>t</sup> O <sub>8</sub> ]	P2 <sub>1</sub>	b=13.032Å	Z=4			Pov., 345-347; Str. Tab., 476;
		(≈Sanidine)		C=/.18/A				KKW, 83, LF, 200.
BULACHITE	Al <sub>2</sub> AsO <sub>4</sub> (OH) <sub>3</sub> .		Orth.	a=15.53Å	Z=10			Am.Min., 1985, 70, 214 (Abs.);
	3H2O		Pmnm	b=17.78A c=7.03Å				Holzel,169.
RITI FRITE	Feso.(OH) 2H <sub>2</sub> O	Fe°S'(O,(OH)/(H,O),1	Mon.	a=6.50Å	8=108°23'	Fe(2a)S(2e)		Am.Min., 1971, 56, 751-757; SR,
	0,4,4,1,1,2,1	77/-7: \/: - \\tag{1-7}	P2 <sub>1</sub> /m	b=7.37Å		O <sub>1</sub> (4f) O <sub>  -   </sub> (2e)		37A,309-310;Pov.,599;Str. Tab.,293;RRW,96.
CAFARSITE	(Ca Mn) <sub>e</sub> (Ti Fe) <sub>e s</sub>		Cub.	a=15.984Å	Z=4			SR,44A,263;RRW,99;Am.Min.,
	(ASO <sub>3</sub> )12.2H2O		Pn3					1978, <u>63</u> ,795(Abs.);Am.Min.,
	1							1967, <u>52</u> ,1584(Abs.);Min.Abs., 78-1499
CAFETITE	(Ca Mo)(Fe Al),Ti		Orth.	a=31.34Å	9=Z			Am.Min.,1986,71,1045-1048;
	0 <sub>12</sub> .4H <sub>2</sub> O		Ammm	b=12.12Å				Am.Min., 1960, 45, 476; Pov.,
				c=4.96Å				319-320;Str.Tab.,198;RRW,99.
CALCIOHILAIRI-	CaZrSi <sub>3</sub> O <sub>9</sub> .3H <sub>2</sub> O		Trig.	a=20.870Å	Z=24			Am.Min., 1988, 73, 1191-1194;
ш			R32	c=16.002A				Hölzel, 205.
CALCIUM	CaZrSi <sub>3</sub> O <sub>9</sub> .H <sub>2</sub> O	Ca <sup>lo</sup> (H <sub>2</sub> O)	Hex.	a=7.32Å	Z=2			RRW, 102; Pov., 368-369; Str.
CATAPLEIITE		{3∞}[Zr°Si₃¹O₃]	P63/mmc	c=10.15A				Tab.,404;Am.Min.,1964,49,
		(≈Catapleiite)						i i sa(Abs.), Holzei suppi
CANAPHITE	Na <sub>2</sub> CaP <sub>2</sub> O <sub>7</sub> .4H <sub>2</sub> O		Mon.	a=5.673Å	$\beta = 106.13^{\circ}$	β=106.13° Ca(2a) Na <sub>I-II</sub> (2a)		Am.Min., 1988, 73, 169-171; K/B,
			٦ -	b=8.48Å c=10.529Å	Z=2	P <sub>I-II</sub> (2a) O <sub>I-XI</sub> (2a)		159;Hölzel,166.
CARI OSTURANI-	(Ma Fe Ti)2.	+-	Mon.	a=36.70Å	B=101.1º			Am.Min., 1985, 70, 767-772;
TE	(Si,Al) <sub>12</sub> O <sub>28</sub> (OH) <sub>34</sub> .	[O <sub>28</sub> (OH) <sub>34</sub> (H <sub>2</sub> O)]		b=9.41Å	Z=2			Hölzel,230;Am.Min.,1985, <u>70,</u>
	H <sub>2</sub> O			C=7.281A	7=0			7.3-781, HOLSEI,230.
CARRIBOYDITE	(Ni, Al)8(SO <sub>4</sub> )1.6	(Ni,Al)8 516	Jex.	0 - 0 - 4 7 0 - 4 7	, _ <b>7</b>			Min Mac 4004 44 222 227
	(OH) <sub>16</sub> .8.5H <sub>2</sub> O	[O <sub>6.4</sub> (OH) <sub>16</sub> (H <sub>2</sub> O) <sub>8.5</sub> ]		C=10.34A				Hölzel, 134.
CASSIDYITE	Ca <sub>2</sub> (Ni,Mg)(PO <sub>4)2</sub> .		Tric.		α=96°49.5			Am.Min.,1967,52,1190-1197;
	2H <sub>2</sub> O		٦-		β=107°21.5'			Pov., 553-554; Str. Tab., 337;
				c=5.41Å	γ=104°34.9°			RRW,111;Hölzel,163.
CATABI FIITE	Na. ZrSi.O. 2H.O	Na, <sup>[6]</sup> (H,O),	Mon.	a=23.917Å	Z=8			Min.Abs.83M/0153;RRW,111;
		(3∞)[Zr <sup>9</sup> Si <sub>3</sub> O <sub>9</sub> ]	B2/b	b=20.148Å				Pov., 368-369; Str. Tab., 403;
				C=7.432A				TOIZEI, 203, 3D, 24-23, 118.

NAME	CHEMICAL	STRUCTURAL FORMUL A	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT	STRUCTURE TYPE	REFERENCES
CESBRONITE	Cu <sub>5</sub> (TeO <sub>3</sub> ) <sub>2</sub> (OH) <sub>6</sub> .		Orth.	a=8.624Å	Z=2			Min.Mag., 1974, 39, 744-746;
	2H <sub>2</sub> O		Pbcn	b=11.878Å c=5.872Å				Hőlzel,93.
CHABAZITE	Ca(Al <sub>2</sub> Si <sub>4</sub> )O <sub>12</sub> .6H <sub>2</sub> O	(Ca,□ <sub>5)</sub> (H <sub>2</sub> O) <sub>6</sub>	Trig.	a=13.78Å	a <sub>R</sub> =9.421Å	(AI,SI)(12i)	(Ca, □ <sub>5</sub> )(H <sub>2</sub> O) <sub>6</sub>	Acta Cryst., 1982, <u>B38</u> , 602-605;
	(3∞)[Al <sub>2</sub> 'Si <sub>4</sub> 'O <sub>12</sub> ]	(3∞)[Al₂'Si₄'O₁2]	R 3m	c=14.97A	α=94.20°	O <sub>1</sub> (6f) O <sub>11</sub> (6g) (rhomb. d.)	(3∞)[Al₂'Si₄'O₁2] CHABAZITE	LF,287;P0V.,351-352;Str.1ab., 492;RRW,117.
CHAI CONATRO.	Na.Cu/CO.), 3H.O	Ive O'H'O'GN	Mon	0=0 608Å	A=01 830	Ca(4e) Na(4e)		Zeit Krist 1978 148 165-177:
NITE	14a2ca(CC3)2.51 12C	fall Call	P2,/n	h=6 101Å	7=7	O. (4e) C (4e)		RRW.119:Pov. 619:SR.45A.
1		780 01/81		c=13.779Å	1	(2: NEI) (2: NAI)		286-287;Hölzel,104.
CHLORMAGALU-	(Mg,Fe) <sub>4</sub> Al <sub>2</sub> (OH) <sub>12</sub>		Hex.	a=5.29Å	Z=1			Am.Min., 1983, 68,849 (Abs.);
MINITE	Cl <sub>2</sub> .2H <sub>2</sub> O		P6/mcm	c=15.46Å				Hölzel,107.
CHOLOALITE	CuPb(TeO <sub>3</sub> ) <sub>2</sub> .H <sub>2</sub> O		Cub.	a=12.519Å	Z=12			Min.Mag.,1981,44,55-57;Min.
			P23					Mag.,1994, <u>58,</u> 505-508;Hölzel, 93.
CLARAITE	(Cu,Zn) <sub>3</sub> CO <sub>3</sub> (OH) <sub>4</sub> .		Hex.	a=26.22Å	S=66			Am.Min.,1983, <u>68</u> ,471(Abs.); Hölzel 106
CLINOHEDRITE	CaZnSiO <sub>4</sub> .H <sub>2</sub> O	Ca <sup>2</sup> Zn <sup>2</sup> Si <sup>2</sup> [O <sub>4</sub> (H <sub>2</sub> O)] <sup>c</sup>	Mon.	a=5.090Å	β=103.26	Ca(4a) Zn(4a)	Ca°Zn'Si'[O4(H2O)]°	Zeit.Krist., 1976, 144, 377-392;
			ပိ	b=15.829Å	Z=4	Si(4a) O <sub>I-V</sub> (4a)	CLINOHEDRITE	RRW,135;Pov.,395;Str.Tab.,
				c=5.386Å		:		392;SR, <u>28,</u> 261-262;SR, <u>43A,</u> 310:Moore 1995a 7-26
THI O LITEON IS	Als KO. (Al. Si. )O.		Mon	9=17 BBOÅ	B=118 479	(A) Sil (Bi)		Zeit Krist 1977 145 216-239:
	20H2O	(14a,176 (1120)20	C2/m	h=17 983Å	7=1			SR 43A 358 Str Tab. 542
	27.54			c=7.400Å		(6. \)()		RRW,136.
COBALTKORI-	(Co,Zn)(AsO <sub>3</sub> OH)		Tric.	a=7.95Å	α= <b>90</b> .9°			Am.Min., 1982, 67, 414 (Abs.);
TNIGITE	.H.O.		P 1 ?	b=15.83Å	β=96.6°			Hölzel, 162; Encyc. Miner. Nam.,
				c=6.67Å	γ=90.0° Z=8			
COLEMANITE	CaB <sub>3</sub> O <sub>4</sub> (OH) <sub>3</sub> .H <sub>2</sub> O	Ca <sup>17</sup> (H <sub>2</sub> O)	Mon.	a=8.743Å	β=110°7'	Ca(4e) B <sub>I-III</sub> (4e)		1 1
		{1∞}[B <sup>r</sup> B <sub>2</sub> O₄(OH)₃] <sup>my</sup>	P2 <sub>1</sub> /a	b=11.264Å c=6.102Å	Z=4	O <sub>I-VIII</sub> (4e)	{1∞}[B"B <sub>2</sub> 'O <sub>4</sub> (OH) <sub>3</sub> ]"" COLEMANITE	
COLLINSITE	Ca <sub>2</sub> (Mg,Fe)(PO <sub>4</sub> ) <sub>2</sub> .		Trịc.	a=5.7344Å	α=97.29°			
	2H2O		7	b=6.780A	$\beta = 108.56^{\circ}$			MIN.ADS., / 3-1844, RRVV, 141,
				c=5.441Å	γ=107.28° Z=1			Pov.,553-554;SR,41A,315; Str.Tab.,336.
COMPREIGNACI-	K <sub>2</sub> (UO <sub>2</sub> ) <sub>6</sub> (OH) <sub>14</sub> .		Orth.	a=7.16Å	Z=2			Am.Min., 1965, 50,807-808
	<b>1</b> 20		<u> </u>	c=14.88Å				Hölzel,90.
COPIAPITE	Fe <sub>5</sub> (SO <sub>4</sub> ) <sub>6</sub> (OH) <sub>2</sub> .	(H <sub>2</sub> O) <sub>6</sub> (1\omega)[Fe <sub>2</sub> °S <sub>3</sub> 'O <sub>12</sub> Tric.	Tric.	a=7.390Å	α=93°40'	Fe <sup>3+</sup> (2i) Fe <sub>I-II</sub> (2i)		Am.Min., 1973, 58, 314-322; Zeit.
		(OF)(F2O)4/2	_	D=18.213A	β=102°3	SI-III(ZI)		Min 1085 22 52-55, Call.
		{g}[re⁻(H₂O)6]		c=7.290A	γ=99°16′ Z=1			1998, <u>213</u> ,141-150.

NAME	CHEMICAL	STRUCTURAL FORMULA	SPACE	UNIT CELL D	UNIT CELL DIMENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
CORRENSITE	<b>8</b> 0	(Mg,Fe,Al) <sub>9</sub> °(OH) <sub>10</sub> (H <sub>2</sub> O) <sub>1</sub> {2∞}{(Si,Al) <sub>4</sub>	Orth.	a=5.33Å b=9.24Å	Z=2			Am.Min., 1982,67, 394-398; Hölzel,231;LF,233-234;Min.
		o₁₀/₂` ≈Vermiculite-Chlorite		K6.92				Abs., 88-182;RRW,148;Pov., 733;Str.Tab.,464.
COWLESITE	Ca(Al <sub>2</sub> Si <sub>3</sub> )O <sub>10</sub> . 5-6H <sub>2</sub> O	Ca(H <sub>2</sub> O) <sub>5-6</sub> {3∞}[Al <sub>2</sub> <sup>t</sup> Si <sup>1</sup> O	Orth. P222.	a=11.27Å	<b>2=</b> 8			Am.Min., 1975, 80, 951-956;
		≈Thomsonite;Zeolite		c=12.61Å				565-566;LF,292.
CYANOCHROITE	K <sub>2</sub> Cu(SO <sub>4</sub> ) <sub>2</sub> .6H <sub>2</sub> O			a=9.09Å	β=104°28			RRW,159;Hölzel,129:Str.Tab.,
			P2 <sub>1</sub> /a	b=12.14Å c=6.18Å	Z=2			289;Pov.,595.
DEFERNITE	Ca <sub>3</sub> CO <sub>3</sub> (OH,CI) <sub>4</sub> .		orth.	a=17.82Å	Z=8	Ca <sub>1-V1</sub> (4c)		Am.Min., 1988, 73,888-893; Am.
	<b>H</b> ₂O		Pnam	b=22.76A c=3.629Å		Cı-ıı( <b>4</b> c)		Min.,1980, <u>65</u> ,1066(Abs.); Hölzel,100.
DIETRICHITE	(Zn,Fe,Mn)Al <sub>2</sub>		Mon.	a=20.5Å	β=96°34'			Hölzel, 129; RRW, 174; Pov., 598;
	(SO <sub>4</sub> ) <sub>4</sub> .22H <sub>2</sub> O		P2	b=24.2Å c=6.18Å	Z=4			Str.Tab.,285.
DITTMARITE	(NH <sub>4</sub> )MgPO <sub>4</sub> .H <sub>2</sub> O		Orth.	a=5.606Å	Z=2			Am.Min., 1972, 57, 1316 (Abs.);
			711112 <sub>1</sub>	C=4.788Å		-		Hölzel, 162; RRW, 176.
DORFMANITE	Na <sub>2</sub> (PO <sub>3</sub> OH).2H <sub>2</sub> O		ë ë	a=10.34Å	Z=8			Am.Min., 1981, <u>66, 217-218</u>
			ć	b=16.82A c=6.01Å				(Abs.);K/B, 159;Hölzel,165.
DYPINGITE	Mg <sub>5</sub> (CO <sub>3</sub> ) <sub>4</sub> (OH) <sub>2</sub> .		ځ	٤				Am.Min., 1970, <u>55</u> , 1457-1465;
FDINGTONITE	Ra/ALSi.\O.	Ra/H,O).	Tot	0=0 594 Å	7-3			MOIZEI, 100; KKW, 182-183.
(tetragonal)	3.5H <sub>2</sub> O	(300)[AI <sub>2</sub> (5)35 (300)[AI <sub>2</sub> (5)35	P 421m	c=6.524Å	7-7			Am.Min.,1985,/U,1333-1334 (Abs.):Str Tab. 487:Pov. 356
								SR,42A,404;LF,289.
EDINGTONITE	Ba(Al <sub>2</sub> Si <sub>3</sub> )O <sub>10</sub> .4H <sub>2</sub> O		orth.	a=9.550Å	Z=2			Acta Cryst., 1976, <u>B32</u> , 1623-
(ormornombic)		{3∞}[Al₂'Si₃'O₁₀] (≈Natrolite,Zeolite)	P21212	b=9.665A c=6.523Å				1627;SR, <u>42A</u> ,404;RRW,185.
EKATERINITE	Ca <sub>2</sub> B <sub>4</sub> O <sub>7</sub> (CI,OH) <sub>2</sub> .		Hex.	a=11.86Å	Z=12			Am.Min., 1983, 68,850 (Abs.);
	2H <sub>2</sub> O		P6/m	c=23.88A				Am.Min.,1981,66,437(Abs.); Hölzel, 115:Min.Abs.,81-3237.
ELPIDITE	Na <sub>2</sub> ZrSi <sub>6</sub> O <sub>15</sub> .3H <sub>2</sub> O		ort.	a=7.14Å	Z=4	Zr(4e) Na <sub>i</sub> (4d)		Am.Min., 1973, 58, 106-109;
			E DOCE	D=14.68A C=14.65Å		Na <sub>II</sub> (4e) Si <sub>I-III</sub> (8c) 		Pov.,369;Str.Tab.,426;RRW, 188:Hölzel,221
ENDELLITE	Al <sub>2</sub> Si <sub>2</sub> O <sub>5</sub> (OH) <sub>4</sub> .	(H <sub>2</sub> O) <sub>2</sub> {z <sub>∞</sub> }[Al <sub>2</sub> °(OH) <sub>4</sub>	Mon.	a≈5.2Å	β=92°18'		(H <sub>2</sub> O) <sub>2</sub> {2∞}[Al <sub>2</sub> °(OH) <sub>4</sub>	RRW,190-191;Pov.,736;Str.
		{2∞}[Si <sub>2</sub> 'O <sub>5</sub> ]"]		b≈8.9A c≈10.1Å	Z=2		{2∞}[Si₂O₅]?] HALLOYSITE -10 Å	Tab.,523,461;Hölzel,235;LF, 239;Pov.,736.
EUCHROITE	Cu <sub>2</sub> AsO <sub>4</sub> (OH).	Cu <sub>2</sub> 'As'	Orth.	a=10.056Å	Z=4	Cu-11(4a) As(4a)		Acta Cryst., 1989, C45, 1479-
		[O <sub>4</sub> (O <sub>1</sub> )(H <sub>2</sub> O <sub>1</sub> ) <sub>3</sub> ]	F212121	c=6.103Å		O <sub>I-VIII</sub> (4a)		1482;RRW,198;Pov.,516;Str. Tab.,341;Hölzel,167.

NAME	CHEMICAL	STRUCTURAL FORMIII A	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT	STRUCTURE TYPE	REFERENCES
EUDIDYMITE	Na <sub>2</sub> Be <sub>2</sub> Si <sub>6</sub> O <sub>15</sub> .H <sub>2</sub> O	Na <sub>2</sub> <sup>[7]</sup> (H <sub>2</sub> O) {3∞}[Be <sub>2</sub> Si <sub>6</sub> O <sub>15</sub> ]	Mon. C2/c	a=12.63A β=103°43' b=7.38Å Z=4 c=14.02Å	3=103°43' Z=4	Na(8f) Be(8f) Si⊢⊪(8f)		Am.Min.,1972, <u>57,</u> 1345-1354; Pov.,362;SR, <u>38A,</u> 367;Str.Tab., 430;RRW,200.
EUGSTERITE	Na <sub>4</sub> Ca(SO <sub>4)3.2H<sub>2</sub>O</sub>		Mon. ?	٠	β=116° Z=?			Am.Min.,1981, <u>66</u> ,632-636; Hölzel,131.
EZCURRITE	Na <sub>2</sub> B <sub>5</sub> O <sub>7</sub> (OH) <sub>3</sub> . 2H <sub>2</sub> O	Na <sub>2</sub> <sup>[87]</sup> (H <sub>2</sub> O) <sub>2</sub> {1∞}[B <sub>5</sub> 'O <sub>7</sub> (OH) <sub>3</sub> ]	P Tic.	a=8.598Å b=9.570Å c=6.576Å	$\alpha = 102^{\circ}45^{\circ}$ $\beta = 107^{\circ}30^{\circ}$ $\gamma = 71^{\circ}31^{\circ}$ Z = 2	Na <sub>I-II</sub> (2) B <sub>I-V</sub> (2) O <sub>I-XII</sub> (2)		Am.Min.,1973, <u>58</u> ,110-115,Am. Min.,1967, <u>52</u> ,1048-1059;Pov., 485;Str.Tab.,258;RRW,202; SR, <u>39A</u> ,262.
FAIRFIELDITE	Ca <sub>2</sub> (Mn,Fe)(PO <sub>4)2</sub> . 2H <sub>2</sub> O	Ca <sub>2</sub> <sup>I7</sup> {1∞}[(Mn,Fe)° P <sub>2</sub> 'O <sub>8</sub> (H <sub>2</sub> O) <sub>2</sub> ] (≈Kröhnkite)	P Tric.	a=5.79Å b=6.57Å c=5.51Å	$\alpha$ =102°16° $\beta$ =108°40° $\gamma$ =90°18° $Z$ =1	Ca(2i) Mn(1a) P(2i) O <sub>I-V</sub> (2i)		Acta Cryst.,1970, <u>B26,</u> 640- 645; RRW,204;Pov.,553-554; Str.Tab.,336;SR, <u>35A</u> ,333-334.
FALCONDOITE	(NI,Mg) <sub>4</sub> Si <sub>6</sub> O <sub>15</sub> (OH) <sub>2</sub> .6H <sub>2</sub> O	(Ni,Mg)₄ <sup>0</sup> (H <sub>2</sub> O) <sub>6</sub> (OH) <sub>2</sub> {2∞}{Sie,O <sub>15</sub> ] (=Sepiolite, ≈Palygorskite)	Orth. Pncn	a=13.5Å b=29.9Å c=5.24Å	Z=4			Hölzel,236;Encyc.Miner.Nam., 95;Can.Min.,1976, <u>14</u> ,407-409.
쁘	Al <sub>4</sub> SO <sub>4</sub> (OH) <sub>10</sub> . 5H <sub>2</sub> O		Hex. ?	ځ				Am.Min., 1965 <u>, 50,</u> 812(Abs.); Hölzel,135.
FERRINATRITE	Na <sub>3</sub> Fe(SO <sub>4)3</sub> .3H <sub>2</sub> O	{3∞}{Na₃ <sup>7/</sup> Fe°S₃ <sup>3</sup> O₁₂ (H₂O)₃]	Trig. P 3	a=15.566Å c=8.69Å Z=6		Na <sub>I-III</sub> (6g) Fe <sub>I-II</sub> (2d) Fe <sub>III</sub> (1a)Fe <sub>IV</sub> (1b) Si <sub>I-III</sub> (6g)		Min.Mag.,1977,41,375-383; RRW,209-210;Pov.,594;Str. Tab.,287;Hőizel,130.
FERRISTRUNZITE Fe <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>3</sub> 5H <sub>2</sub> O	Fe <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>3.</sub> 5H <sub>2</sub> O		Tric. P1	a=10.01Å b=9.73Å c=7.334Å	$\alpha = 90.52^{\circ}$ $\beta = 96.99^{\circ}$ $\gamma = 116.43^{\circ}$ Z = 2			Am.Min.,1989, <u>74,</u> 502(Abs.); Hölzel,168.
FERROSTRUNZI- TE	Fe <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>2</sub> . 6H <sub>2</sub> O		Trịc. P 1	a=10.23Å b=9.77Å c=7.37Å	$\alpha$ =89.65° $\beta$ =98.28° $\gamma$ =117.26° Z=2			Am.Min.,1984 <u>,69,</u> 811(Abs.); K/B,156;Hölzel,171.
FIBROFERRITE	FeSO <sub>4</sub> (OH).5H <sub>2</sub> O	Fe°S'[O4(OH)(H <sub>2</sub> O) <sub>5</sub> ]	Trig. R 3	a=24.176Å c=7.656Å	Z=18			Min.Abs.,83M/1237;RRW,213- 214;Pov.,599;Str.Tab.,293; Hölzel,135.
GAIDONNAYITE	Na <sub>2</sub> ZrSi <sub>3</sub> O <sub>9</sub> .2H <sub>2</sub> O	Na <sub>2</sub> °Zr²(H <sub>2</sub> O) <sub>2</sub> {1∞}{Si₃ <sup>t</sup> O₃] (=Georgechaoite)	Orth. P2 <sub>1</sub> nb	a=11.740Å b=12.820Å c=6.691Å	Z=4	Na <sub>⊡</sub> (4a) Zr(4a) Si <sub>⊡⊪</sub> (4a)		Can.Min.,1985, <u>23</u> ,11-15; Hölzel,205.
GAYLUSSITE	Na <sub>2</sub> Ca(CO <sub>3)2</sub> .5H <sub>2</sub> O	(g)[(C <sup>1</sup> O <sub>3</sub> )] <sub>2</sub>	Mon. C2/c	a=14.349Å b=7.780Å c=11.207Å	β=127°51' Z=4	Na(8f) Ca(4e) O <sub>LV</sub> (8f) O <sub>VI</sub> (4e) C(8f)		SR <u>,33A,</u> 435-436;Am.Min., 1967, <u>52</u> ,1570-1572;Hölzel, 164;Pov.,619;Str.Tab.,245.

NAME	CHEMICAL	STRUCTURAL	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
GEORGEITE	Cu <sub>5</sub> (CO <sub>3</sub> ) <sub>3</sub> (OH) <sub>4</sub> . 6H <sub>2</sub> O		Amorph.					Min.Mag.,1979,43,97-98;Min. Mag.,1991,55,163-166.
GINIITE	Fe <sub>5</sub> (PO <sub>4</sub> ) <sub>4</sub> (OH) <sub>2</sub> . 2H <sub>2</sub> O		Mon. P2/a	a=14.253Å b=5.152Å c=10.353Å	β=111.30° Z=2			Min.Abs.,81-3230;Am.Min., 1980, <u>65,</u> 1066(Abs.).
GISMONDINE	Ca <sub>2</sub> Al <sub>4</sub> Si <sub>4</sub> O <sub>16</sub> .9H <sub>2</sub> O	Ca₂ <sup>°</sup> (H₂O) <sub>9</sub> {3∞}{Al₄¹Si₄¹O₁6] (Zeolite)	Mon. P2 <sub>1</sub> /c	a=10.02Å b=10.62Å c=9.84Å	β=92°25' Z=2	Ca(4e) Al <sub>I-II</sub> (4e) Si <sub>I-II</sub> (4e)	Ca₂ <sup>°</sup> (H₂O)₅ {3∞}{Al⁴Si₄¹O₁₅] GISMONDINE	Am.Min., 1963, 48, 664-672; SR, 28, 279-281; Pov., 355; Str. Tab., 491; RRW, 237; LF, 295.
GMELINITE	Na₄(Al₄Si <sub>8</sub> )O <sub>24</sub> . 11H₂O	Na <sub>4</sub> (H <sub>2</sub> O) <sub>11</sub> {3∞}[Al <sub>4</sub> Sis O <sub>24</sub> ] (Zeolite)	Hex. P6 <sub>3</sub> /mmc	a=13.756Å c=10.048Å		Na(4f) (Si,Al)(24l)		SR,31A,227-228;Min.Abs., 83M-0165;LF,286;Pov.,351- 352; Str.Tab.,492;RRW,240.
GOLDICHITE	KFe(SO <sub>4)2</sub> .4H <sub>2</sub> O	K <sup>(10/11</sup> {2∞}{Fe°S₂¹O <sub>8</sub> (H₂O)₄]	Mon. P2 <sub>1</sub> /c	a=10.387Å b=10.486Å c=9.086Å	β=101.68 <sup>a</sup> Z=4	β=101.68° Κ(4e) Fe(4e) Z=4 Οι-χιι(4e)		Am.Min., 1971, <u>56,</u> 1917-1933; RRW, 241-242; Pov., 595; Str. Tab., 287; SR, <u>37A,</u> 308-309.
GOOSECREEKI- TE	Ca(Al <sub>2</sub> Si <sub>6</sub> )O <sub>16</sub> .5H <sub>2</sub> C	, Ca <sup>l೮</sup> (H <sub>2</sub> O) <sub>5</sub> {3∞}[Al₂′Si₅′O₁₅] (Zeolite)	Mon. P2 <sub>1</sub>	a=7.401Å b=17.439Å c=7.293Å	β=105.44° Z=2	Ca(2a) Al <sub>ı-ιι</sub> (2a) Si <sub>ι-νι</sub> (2a)		Am.Min.,1986 <u>,71,</u> 1494-1501; Hölzel,246.
GÖRGEYITE	K <sub>2</sub> Ca <sub>5</sub> (SO <sub>4</sub> ) <sub>6</sub> .H <sub>2</sub> O	K <sub>2</sub> <sup>[8]</sup> [Ca <sub>3</sub> <sup>9]</sup> Ca <sub>2</sub> <sup>18</sup> S <sub>6</sub> O <sub>24</sub> (H <sub>2</sub> O)]	Mon. B2/b	a=17.519Å b=18.252Å c=6.840Å	β=113.33° Z=4			Min.Abs.,82M/152;RRW,243; Pov.,594;Str.Tab,290;Hőizel, 131;RRW,243;SR,46A,349; Zeit.Krist.,1998, <u>213,</u> 141-150.
GOWERITE	CaB <sub>6</sub> O <sub>8</sub> (OH) <sub>4</sub> .3H <sub>2</sub> O		Mon. P2₁/a	a=12.882Å b=16.360Å c=6.558Å	β=121.62° Z=4	β=121.62° Ca(4e) Β <sub>1-VI</sub> (4e) Z=4 Ο <sub>1-XII</sub> (4e)		Am.Min.,1972, <u>57</u> ,381-396; RRW,244;Pov.,483;Str.Tab., 261;SR, <u>38A,</u> 296.
GRANTSITE	Na <sub>4</sub> Ca <sub>0.7</sub> V <sub>12</sub> O <sub>32</sub> . 8H <sub>2</sub> O		Mon. C2/m	a=17.54Å b=3.60Å c=12.41Å	β=95°15' Z=1			Am.Min.,1964,49,1511-1526; RRW,245-246;Pov.,502;Str. Tab.,223;Am.Min.,1990,75, 508-521;Hölzel,88.
GRUMANTITE	NaSi <sub>2</sub> O <sub>4</sub> (OH).H <sub>2</sub> O		Orth. Fdd2	a=15.979Å b=18.25Å c=7.169Å	Z=16			Zeit.Krist.,1988, <u>185,</u> 612(Abs.), Am.Min.,1988, <u>73</u> ,440(Abs.); Hölzel,226.
HAIDINGERITE	Ca(AsO <sub>3</sub> OH).H <sub>2</sub> O	Ca°As[O₃(OH)(H₂O)]	Orth. Pcnb	a=6.904Å b=16.161Å c=7.935Å	Z=8	Ca(8d) As(8d) O <sub>LIV</sub> (8d)		Acta Cryst., 1972, <u>B28,</u> 209-214; Bull.Min., 1966, <u>89</u> , 18-22; Pov., 524; Str. Tab., 338; RRW, 254- 255; SR, <u>32A</u> , 387-388.
HALLOYSITE - - 10A	Al <sub>2</sub> Si <sub>2</sub> O <sub>5</sub> (OH) <sub>4</sub> . 2H <sub>2</sub> O	1 <sub>2</sub> °(OH) <sub>4</sub>	Mon. Cm	a=5.20Å b=8.92Å c=10.25Å	β=100° Z=2	Al(4b) Si(4b)	(H <sub>2</sub> O) <sub>2</sub> {2∞}{Al <sub>2</sub> °(OH) <sub>4</sub> {2∞}{Si <sub>2</sub> ¹O <sub>5</sub>   <sup>3</sup> ] HALLOYSITE - 10Å	LF,239;RRW,256;Pov.,436; Str.Tab.,461;SB,3,544-545.
HALOTRICHITE	FeAl <sub>2</sub> (SO <sub>4</sub> ) <sub>4.</sub> 22H <sub>2</sub> O Fe <sup>o</sup> Al <sub>2</sub> <sup>o</sup> S <sub>4</sub> <sup>t</sup> [O <sub>16</sub> (H <sub>2</sub> O) <sub>22</sub> ] (=Apjohnite)	Fe <sup>3</sup> Al <sub>2</sub> °S <sub>4</sub> ' [O <sub>16</sub> (H <sub>2</sub> O) <sub>22</sub> ] (=Apjohnite)	Mon. P2/m	a=20.51Å b=24.28Å c=6.18Å	β=100% Z=4			Hölzel, 129;RRW, 256;Pov., 598; Str. Tab., 285;Min. Abs., 88M/ 1830.

NAME	CHEMICAL	STRUCTURAL	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT	STRUCTURE TYPE	REFERENCES
HALURGITE	Mg <sub>2</sub> (B <sub>4</sub> O <sub>5</sub> (OH) <sub>4</sub> ) <sub>2</sub> . H <sub>2</sub> O	V TOWN	Mon. P2/c	a=13.25Å b=7.60Å c=13.20Å	β=92°9′ Z=4			Sov.Phys.Cryst.,1965,9,616- 617;Hölzel,115;Pov.,478;Str. Tab.,258.
HELMUTWINKLE- RITE	PbZn <sub>2</sub> (AsO <sub>4)2</sub> . 2H <sub>2</sub> O		P1		α=94.7° β=110.7° γ=112.7° Z=1			Min.Abs.,80-4913;Hölzel,162; Am.Min.,1980 <u>,65</u> ,1067(Abs.).
HEMIMORPHITE	Zn <sub>4</sub> Si <sub>2</sub> O <sub>7</sub> (OH) <sub>2</sub> .H <sub>2</sub> O	Zn <sub>4</sub> Si <sub>2</sub> O <sub>7</sub> (OH) <sub>2</sub> .H <sub>2</sub> O (H <sub>2</sub> O) {3∞}{Si <sub>2</sub> '2n <sub>4</sub> 'O <sub>7</sub> (OH) <sub>2</sub> ]	Orth. I mm2	a=8.367Å b=10.730Å c=5.115Å	Z=2	Zn(8e) Si(4d)		Zeit.Krist.,1977, <u>146,</u> 241-259; Str.Tab.,76;LF,194.
HEULANDITE	(Na,K,Ca,Sr,Ba) <sub>5</sub> (Al <sub>9</sub> Si <sub>27</sub> )O <sub>72</sub> .26H <sub>2</sub> O	(Na,K,Ca,Sr,Ba) <sub>5</sub> <sup>[5]</sup> (H <sub>2</sub> O) <sub>26</sub> {3∞}[Als <sup>5</sup> Si <sub>27</sub> <sup>4</sup> O <sub>72</sub> ] (Zeolite)	Mon. Cm	a=17.73Å b=17.82Å c=7.43Å	β=116°20'h Z=1	β=116°20'Na,K,Ca,S/),⊔∥ Z=1 (Sa) (Si,Al)⊥x(4b)	(Na,K,Ca,Sr,Ba) <sub>5</sub> <sup>[9]</sup> (H <sub>2</sub> O) <sub>26</sub> {3∞}[AlgʻSi <sub>27</sub> <sup>t</sup> O <sub>72</sub> ] HEULANDITE	Am.Min.,1968, <u>53</u> ,1120-1138; Pov.,354;Str.Tab.,489;RRW, 271-272;LF,298.
HILAIRITE	Na <sub>2</sub> ZrSi <sub>3</sub> O <sub>9</sub> .3H <sub>2</sub> O	Na₂(H₂O)₃ {1∞}{ZrºSi₃¹O₃l	Trig. R32	a=10.556Å c=15.855Å	9=Z			Min.Abs.,83M/4219;Hölzel,205
HILGARDITE - - 1Tc	Ca <sub>2</sub> B <sub>5</sub> O <sub>3</sub> Cl.H <sub>2</sub> O	Ča <sub>2</sub> <sup>[8/1</sup> (H <sub>2</sub> O)Čl {3∞}[B₃¹B₂ <sup>tr</sup> Oց] (≈Tyretskite)	Tric.	a=6.463Å b=6.564Å c=6.302Å	$\alpha = 61^{\circ}38'$ $\beta = 118^{\circ}46'$ $\gamma = 105^{\circ}46'$ Z = 1			Min.Abs.,79/2129;Hölzel,118; Am.Min.,1985, <u>70</u> ,636-637;SR, 45 <u>A</u> ,282-283.
HILGARDITE -	Ca <sub>2</sub> B <sub>5</sub> O <sub>9</sub> Cl.H <sub>2</sub> O	Ca₂ <sup>[ssy]</sup> (H <sub>2</sub> O)Cl {3∞}{B₃¹B₂¹Co₃] (≈Tyretskite)	Tric. P1	a=17.495Å b=6.487Å c=6.313Å	$\alpha = 60.77^{\circ}$ $\beta = 79.56^{\circ}$ $\gamma = 83.96^{\circ}$ Z = 3	Ca <sub>l-vi</sub> (1a) Cl <sub>ι-lii</sub> (1a)		Am.Min.,1983 <u>,68</u> ,604-613;Am. Min.,1985 <u>,70</u> ,636-637.
HILGARDITE - 4M	Ca <sub>2</sub> B <sub>5</sub> O <sub>9</sub> Cl.H <sub>2</sub> O	Ca <sub>2</sub> <sup>tBoy</sup> (H <sub>2</sub> O)Cl {3∞}{B₃ <sup>tB</sup> 2 <sup>tr</sup> O <sub>9</sub> ] (≈Zeolite)	Mon. Aa	a=11.438A b=11.318A c=6.318A	β=90.06° Z=4	Ca <sub>I-II</sub> (4a) CI(4a) B <sub>I-V</sub> (4a)		Am.Min.,1979, <u>64</u> ,187-195,Am. Min.,1985, <u>70</u> ,636-637;Hölzel, 118.
HISINGERITE	Fe <sub>2</sub> Si <sub>2</sub> O <sub>5</sub> (OH) <sub>4</sub> . 2H <sub>2</sub> O		Mon. ? (Amorph.)	٤				Min.Abs.;83M/2626;Pov.,741; Str.Tab.,462;Hölzel,235.
HOHMANNITE	Fe <sub>2</sub> O(SO <sub>4)2</sub> .8H <sub>2</sub> O	(H₂O)₄{1∞} Fe₂°S₂¹O₂ (H₂O)₄] (≈Amarantite)	Tric. P 1	a=9.148Å b=10.922Å c=7.183Å	α=90.29° β=90.79° γ=107.36° Z=2		,	SR, <u>44A,</u> 273;Min.Mag.,1978, 4 <u>2</u> ,144-146;Hölzel,135;Zeit. Krist,1998, <u>213</u> ,141-150;Str. Tab.,293;Pov.,599;RRW,277.
HONESSITE	(Ni,Fe) <sub>6</sub> SO <sub>4</sub> (OH) <sub>16.</sub> nH <sub>2</sub> O	(H₂O) <sub>n</sub> [ ₂∞[(Ni,Fe) <sub>8</sub> ° (OH)₁₀{g}[S'O₄] ] (≈Reevesite)	Trig.	a=3.083Å c=26.71Å Z=?				Am.Min., 1959, <u>44</u> , 995-1009; Hölzel, 134;Pov., 606;Str.Tab., 534;Min.Mag., 1981, <u>44</u> , 339- 343;Zeit.Kris., 1998, <u>213,</u> 141.
HUEMULITE	Na4MgV <sub>10</sub> O <sub>28</sub> . 24H <sub>2</sub> O		Tric. 	a=11.770Å b=11.838Å c=9.018Å	α=107°13' β=112°10' γ=101°30' Z=1			Am.Min.,1966, <u>51,</u> 1-13;Hölzel, 87;RRW,282;Str.Tab.,222; Pov.,502.

NAME	CHEMICAL	STRUCTURAL	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT	STRUCTURE TYPE	REFERENCES
HIMMERITE	KMrV.O., 8H.O	COMPA	Tric	a=10.81Å	v=106°4'			Pov.:502:Am.Min.:1955,40,314
	7: :5:+1 ) C. R.		14-	h=11 01Å	B=107°49'			-315;RRW,284;Hölzel,87;
				2 85 Å	V=65°40'			Str. Tab221:Am.Min.,1951.36,
					Z=2 +2			326-327.
HUNGCHAOITE	MgB <sub>4</sub> O <sub>5</sub> (OH) <sub>4</sub> .	(H <sub>2</sub> O) <sub>2</sub> {3∞}[Mg°	Tric.	a=8.807Å	α=103.39°	Mg(2i) B <sub>I-IV</sub> (2i)		Am.Min., 1977, 62, 1135-1143;
	7H <sub>2</sub> O	(H <sub>2</sub> O) <sub>5</sub> B <sub>4</sub> O <sub>5</sub> (OH) <sub>4</sub> ]	<u>Т</u>	b=10.657Å	$\beta = 108.53^{\circ}$	O <sub>I-V</sub> (2i)		SR,43A,225;Am.Min.,1965,50,
				c=7.897Å	γ=97.18° Z=2			262(Abs.);Hölzel,115.
HYDROBASALU-	Al <sub>4</sub> SO <sub>4</sub> (OH) <sub>10</sub> .		Mon.	a=14.911Å	B=112.40°			Min.Mag.,1980,43,931-937;
MINITE	15H,O		۷	b=9.993Å	Z=2			Pov., 606; Str. Tab., 294; Hölzel,
	•			c=13.640Å				135.
HYDROCALUMI-	Ca <sub>4</sub> Al <sub>2</sub> (OH) <sub>12</sub>		Mon.	a=9.6Å	β=111°			Pov., 330; Str. Tab., 219; RRW,
2	(CI,CO <sub>3</sub> ,OH,H <sub>2</sub> O) <sub>2.5</sub>		P2 <sub>1</sub>	b=11.4A c=16.8Å	Z=4			288;Hölzel,108.
HYDROGLAUBER	Na <sub>10</sub> Ca <sub>3</sub> (SO <sub>4</sub> ) <sub>8</sub> .		2	٤				Am.Min., 1970, 55, 321 (Abs.);
ПЕ	6H <sub>2</sub> O							Pov.,606;RRW;289;Hölzel131; Zeit.Krist.,1998,213,141-150.
HYDROMAGNE-	Mqs(CO <sub>2</sub> )4(OH)2.	(3∞){ Ma <sub>5</sub> (OH),	Mon.	a=10.105Å	B=114.44°	Mg <sub>1-11</sub> (4e)		Acta Cryst., 1977, <u>B33</u> , 1273-
SITE	4H,0	(H <sub>2</sub> O) <sub>4</sub> [g][C <sup>tr</sup> O <sub>3</sub> ] <sub>4</sub> ]	P2 <sub>1</sub> /c	b=8.954Å		Mg <sub>III</sub> (2a)		1275;Hölzel,106;Pov.,620;Str.
	•			c=8.378Å		O <sub>I-VIII</sub> (4e)		Tab.,246;SR,40A,227;LF,187.
IANTHINITE	UO(UO <sub>3</sub> ) <sub>5</sub> .10H <sub>2</sub> O		Orth.	a=11.52Å	Z=4			Bull.Min., 1959, 82, 80-86; Am.
			٠.	b=7.15A				Min.,1959,44,1103-1104;
				C=3U.3A				HOIZEI, 9U.
INDERITE	MgB <sub>3</sub> O <sub>3</sub> (OH) <sub>5</sub> .	(H <sub>2</sub> O) <sub>5</sub> {g}{Mg°B <sub>2</sub> 'B"	Mon.	a=12.02Å	4°40	Mg(4e) B <sub>I-III</sub> (4e)		SR,28,160;Hölzel,115;Str.Tab.,
-	5H <sub>2</sub> O	O <sub>3</sub> (OH)₅] (≈Kumakovite)	P24/8	D=13.12A C=6.84Å	<b>5=7</b>	O <sub>I-XIII</sub> (4e)		207,F0V.,470.
INYOITE	CaB <sub>3</sub> O <sub>3</sub> (OH) <sub>5</sub> .4H <sub>2</sub> O Ca <sup>[8]</sup> (H <sub>2</sub> O) <sub>4</sub>	Ca <sup>[8]</sup> (H <sub>2</sub> O) <sub>4</sub>	Mon.	a=10.63Å	B=114°2'	Ca(4e) B <sub>I-III</sub> (4e)		Acta Cryst., 1959, 12, 162-170;
		{g}[B <sub>2</sub> 'B"O <sub>3</sub> (OH) <sub>5</sub> ]	P2 <sub>1</sub> /a	b=12.06Å	Z=4	:		RRW, 302; Pov., 476; SR, 23,
				c=8.405Å				414-415.
IRIGINITE	U(MoO <sub>4</sub> ) <sub>2</sub> (OH) <sub>2</sub> .		Mon.	a=8.58Å	$\beta = 107^{\circ}40'$			Am.Min.1964,49,408-414;
	2H <sub>2</sub> O		<i>~</i>	b=12.87A c=7.48Å	Z=3			Pov.,572;Str.Tab.,302;Holzel,
IAMBORITE	(Ni Fe) SO (OH)		Hex.	a=3.07Å	Z=2			Am.Min., 1973, 58, 835-839;
	nH20		2	c=23.3Å				Hölzel,83.
JENNITE	Ca <sub>9</sub> Si <sub>6</sub> O <sub>16</sub> (OH) <sub>10</sub> .		Tric.	a=10.593Å	α=99.67°			Am.Min., 1977, 62, 365-368;
	6H <sub>2</sub> O		<i>ر</i>	b=7.284Å	β=97.65°			Am.Min., 1966, 51, 56-74; Hölzel,
				c=10.839Å	γ=110.11° Z=1?			220;Pov.,419;Str.Tab.,401.
JOLIOTITE	(UO <sub>2</sub> )CO <sub>3</sub> .2H <sub>2</sub> O		Orth.	a=8.16Å	Z=4			Hölzel, 109; Encyc. Miner. Nam.,
	•		Pmmm	b=10.35Å c=6.32Å				149; Min.Abs.,77/2184.

NAME	CHEMICAL	STRUCTURAL	SPACE	UNIT CELL DIMENSIONS	MENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
JULIËNITE	Na <sub>2</sub> Co(SCN) <sub>4</sub> .	Na <sub>2</sub> <sup>[8]</sup> (H <sub>2</sub> O) <sub>8</sub>	Mon.	a=18.941Å	β=91.64°	Na <sub>1-11</sub> (4e) Co(4e)		Acta Cryst.,1982, <u>B38</u> ,1084-
	8H <sub>2</sub> O	Co{6}[SCN]4	P2 <sub>1</sub> /n	b=19.209A c=5.460Å	Z=4	S <sub>I-IV</sub> (4e)		1088;SR, <u>17,</u> 462-463;Str.Tab., 495;Hölzel,250.
JUNITOITE	CaZn <sub>2</sub> Si <sub>2</sub> O <sub>7</sub> .H <sub>2</sub> O	Ca°Zn2'Si2'[O7(H2O)]°	Orth.	a=12.510Å	2=4	Zn <sub>I-II</sub> (4a) Ca(4b)	Zn <sub>I-II</sub> (4a) Ca(4b) Ca°Zn <sub>2</sub> 'Si <sub>2</sub> [O <sub>7</sub> (H <sub>2</sub> O)]°	Min.Mag.,1985,49,91-95;
			Ama2	b=6.318Å		Si(8c) O - 111(8c)	JUNITOITE	Hölzel,220;Am.Min.,1976, <u>61,</u>
				c=8.561Å		O <sub>IV</sub> (4b)		1255-1258; Moore, 1995a, 7-26.
JURBANITE	AISO4(OH).5H2O	(H <sub>2</sub> O) <sub>2</sub> [[g][Al <sub>2</sub> °(OH) <sub>2</sub>	l	a=8.3965Å	Z=4	S(4e) AI(4e)		Zeit.Krist., 1985, 173, 33-39; Am.
		(H <sub>2</sub> O) <sub>8</sub> ] {g}[S <sup>1</sup> O <sub>4</sub> ] <sub>2</sub> ]	P2,/n	b=12.479Å		O <sub>I-X</sub> (4e)		Min., 1976, 61, 1-4; Hölzel, 134; Zeit Krist 1998 213 141-150
KAZAKHSTANITE		(2)	Mon.	a=11.84Å	B=100.0°			Am.Min., 1991, 76, 667 (Abs.);
	8.5H <sub>2</sub> O		C2/c	b=3.650Å	Z=1 ?			Hölzel suppl
KENYAITE	NanSino, (OH),		Mon	2=7 79Å	R=05054'			Am Min 1968 53 2061-2069
	6H <sub>2</sub> O		~	b=19.72Å	Z=1			Am.Min., 1968, 53, 510-511
				c=6.91Å				(Abs.); Hölzel,227;RRW,322.
KERNITE	Na₂B₄O <sub>6</sub> (OH)₂.	Na <sub>2</sub> <sup>[5]</sup> (H <sub>2</sub> O) <sub>3</sub>	Mon.	a=7.0172Å	β=108°86'	Na <sub>I-II</sub> (4e)		Am.Min.,1973,58,21-31;SR,
	3H <sub>2</sub> O	{1∞}[B₂B₂"O <sub>6</sub> (OH)₂]	P2 <sub>1</sub> /c	b=9.1582A c=15.6774Å	Z=4	B <sub>I-IV</sub> (4e) O <sub>I-XI</sub> (4e)		32A,501-502;LF,218;Pov.,482; Str.Tab.,261.
KEROLITE	Mg <sub>3</sub> Si <sub>4</sub> O <sub>10</sub> (OH) <sub>2</sub> .	Mg <sub>3</sub> (OH) <sub>2</sub>	2	خ				Am.Min., 1979, <u>64,</u> 615-625;
	H <sup>2</sup> 0	{2∞}[Si4 O₁0]						Hölzel suppl.;Str.Tab.,541;
		(≈Pimelite,≈Talc)						Pov.,744;LF,227.
KHADEMITE	AI(SO <sub>4</sub> )F.5H <sub>2</sub> O		Orth.	a=11.178Å	Z=8			Min.Mag.,1988, <u>52</u> ,133-134;
			Pcab	b=13.055Å				Hölzel, 134; Am. Min., 1981, 66,
				c=10.887A				1102-1103(Abs.).
KIMURAITE - (Y)	CaY <sub>2</sub> (CO <sub>3</sub> ) <sub>4</sub> .6H <sub>2</sub> O		Orth.	a=9.2545Å	Z=4			Am.Min.,1986,71,1028-1033;
			I mm2	b=23.976Å c=6.0433Å				Hölzel, 105.
KINGITE	Al <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> (OH,F) <sub>3</sub> .		Tric.	a=9.15Å	α=98.6°			Am.Min., 1970, <u>55,</u> 515-517;
	9H <sub>2</sub> O		2	b=10.00Å	β=93.6°			RRW,325;Hölzel,168.
				c=7.24Å	γ=93.2° 7=2			
KINICHILITE	(H,Na) <sub>2</sub> (Fe,Mg,Zn) <sub>2</sub>		Hex.	a=9.419Å	Z=2			Am.Min., 1982, 67, 623 (Abs.);
	(TeO <sub>3</sub> ) <sub>3</sub> .3H <sub>2</sub> O		P63	c=7.665Å				Min.Abs.,84M/1932;Hölzel,93.
KINOITE	Ca <sub>2</sub> Cu <sub>2</sub> Si <sub>3</sub> O <sub>10</sub> .	{3∞}[ Ca <sub>2</sub> °(H <sub>2</sub> O) <sub>2</sub>	Mon.	a=6.990Å	β=96°5'	Cul-II(2e) Ca(4f)		Am.Min., 1971, <u>56</u> , 193-200;
	2H <sub>2</sub> O	Cu <sub>2</sub> [59/ [9][Si <sub>3</sub> O <sub>10</sub> ]]	P2 <sub>1</sub> /m	b=12.890Å	Z=2	Si <sub>I</sub> (2e) Si <sub>II</sub> (4f)		RRW,325;Pov.,407;SR, <u>37A,</u>
		(≈Snattuckite)		C=5.654A				330.
KIPUSHITE	(Cu,Zn) <sub>6</sub> (PO <sub>4</sub> ) <sub>2</sub>	(Cu,Zn) <sub>6</sub> 'P <sub>2</sub> '	Mon.	a=12.197Å	β=96.77°	Cul-v(4e) Zn(4e)		Can.Min., 1985, <u>23</u> , 35-42;
		[O <sub>8</sub> (OH) <sub>6</sub> (H <sub>2</sub> O)] (=Veszelyite)	P2 <sub>1</sub> /c	b=9.156A c=10.667Å	Z=4	P <sub>I-II</sub> (4e)		Hölzel, 167;K/B, 190,91-92;Am. Min., 1974, <u>59,</u> 573-581.

NAME	CHEMICAL	STRUCTURAL FORMULA	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
KOKTAITE	(NH4)2Ca(SO4)2.		Mon.	a=10.17Å	8=102°45			Pov594:Str.Tab291:RRW.
	H <sub>2</sub> O	-	P2 <sub>1</sub> /m	b=7.15Å	Z=2			329;Hölzel,131;Am.Min.,1949,
				c=6.34Å				34,618(Abs.).
KONYAITE	Na <sub>2</sub> Mg(SO <sub>4</sub> ) <sub>2</sub> .5H <sub>2</sub> O		Mon.	a=5.784Å	β=95.37°			Am.Min., 1982, 67, 1035-1038;
			P2 <sub>1</sub> /c	b=24.026Å	Z=4			Hölzel,130.
				C=0.000A				
KORITNIGITE	Zn(AsO <sub>3</sub> OH).H <sub>2</sub> O		Tric.	a=7.948Å	∞ <b>=80.86</b> °			Am.Min.,1980,65,203(Abs.);
			_	b=15.829Å	β=96.56°			Min.Abs.,81-0253;Hölzel,162.
				c=6.668Å	γ=90.05° Z=8			
KOSTYLEVITE	K <sub>2</sub> ZrSi <sub>3</sub> O <sub>9</sub> .H <sub>2</sub> O		Mon.	a=13.171Å	β=105.26			Am.Min.,1984,69,812(Abs.);
			P2 <sub>1</sub> /a	b=11.717Å	Z=2			Min.Abs.,83M/4213.
				c=6.565Å				
KOVDORSKITE	Mg2PO4(OH).3H2O	Mg <sub>2</sub> °P <sup>c</sup>	Mon.	a=10.35Å	$\beta = 102^{\circ}0'$			Min.Abs.,82M/1161;Am.Min.,
		[O <sub>4</sub> (OH)(H <sub>2</sub> O) <sub>3</sub> ]	P2 <sub>1</sub> /a	b=12.90Å	Z=4			1981, <u>66</u> ,437(Abs.);K/B,114-
KDAIISITE	KEO/CO.), H.O.	V 30-311-011	Mon	2-7 000 8	200 700	V(00) E0(00)		A 100 000 34 000 005.00
	N-6(504)2.1120		P2./m	8=7.920A	p=102./67	D=102.101 N(28) F6(28)		AM.MIII., 1980, /1, 202-205; SK, 304 372-373: Dov. 603: 79:
		102 D		C=9.014Å	7_7	G-11(46)		Krist. 1998.213.141-150.
KRAUTITE	Mn(AsO <sub>2</sub> OH) H <sub>2</sub> O	MnºAst	Mon	a=8 012Å	R=OR RO	Mn. (40)		Am Min 1070 64 1248 1254
		[O,(OH)(HO)]	P2,/n	h=15.956Å	7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	AS:(4e)		Am Min 1978 61 503/Abs >-
		(≈Haidingerite)	: :	c=6.801Å	· ·	()		SR,45A,321.
KRÖHNKITE	Na <sub>2</sub> Cu(SO <sub>4</sub> ) <sub>2</sub> .2H <sub>2</sub> O	Na <sub>2</sub> <sup>[7]</sup> {1∞}[Cu <sup>o</sup> S <sub>2</sub> <sup>t</sup> O <sub>8</sub>	Mon.	a=5.807Å	β=108.32	β=108.32° Cu(2a) Na(4e)		Acta Cryst.,1975,B31,1753-
		(H <sub>2</sub> O) <sub>2</sub> ]	P2 <sub>1</sub> /c	b=12.656Å	Z=2	O <sub>I-IV</sub> (4e)		1755;SR, 26,449-451;Pov.,603-
		(=Brandtite)		c=5.517Å				604;Zeit.Krist.,1998, <u>213</u> ,141.
KTENASITE	(Cu,Zn) <sub>5</sub> (SO <sub>4</sub> ) <sub>2</sub>	2∞[(Cu,Zn) <sub>4</sub> °S <sub>2</sub> 'O <sub>8</sub>	Mon.	a=5.589Å	β=95.55°	Zn(2a) Cu <sub>I-II</sub> (4e)		Zeit.Krist.,1978,147,129-140;
	(OH) <sub>6</sub> .6H <sub>2</sub> O	(OH)@[[@][Zu^(H2O)@]	P2 <sub>1</sub> /c	b=6.166A		S(4e)		Pov., 598; Str. Tab., 292; Zeit.
THE CANADITA		0.00	-	C150.0210	- 1	000		NIS., 1990, 212, 141-130.
NURNANOVIIE	MgB <sub>3</sub> O <sub>3</sub> (OH) <sub>5</sub> .	30 Mg (OH)5 (a)[B, B"O, (H,O),1]	P.16.	a=8.34/9A α=98.846° h=10 6068Åβ=108 891		Mg(ZI) O <sub>[-XIII</sub> (ZI) B <sub>[-III</sub> (ZI)		Acta Cryst., 1974, <u>B30</u> , 2194- 2199: Pov. 477: Str Tab. 257
		(a) (2) (2) (3) (4)		0-6 44478				
		(≈iiideiite)		$C=0.144/A \gamma = 105.381^{\circ}$ Z=2	7=105.581° Z=2			TOIZEI, 114.
LANGITE	Cu <sub>4</sub> SO <sub>4</sub> (OH) <sub>6</sub> .2H <sub>2</sub> O	Cu4°S <sup>r</sup>	Mon.	a=7.137Å	β=90.00	S(2a) Cu <sub>I-IV</sub> (2a)		Acta Cryst., 1984, C40, 1309-
		[O <sub>4</sub> (OH) <sub>6</sub> (H <sub>2</sub> O) <sub>2</sub> ]	,		Z=2	O <sub>I-XII</sub> (2a)		1311;Pov.,598;Str.Tab.,292;
	(≈Wroewolfeite)	(~Wroewolfeite)		C=11.21/A?				RRW,341.
LARDERELLITE	NH4B5O7(OH)2.H2O	NH4(H <sub>2</sub> O)	Mon.	a=9.47Å	β=97°5'	B <sub>I-IV</sub> (4e) N(4e)		Acta Cryst., 1969, <u>B25, 2264</u> -
		{1∞}[B <sub>5</sub> O <sub>7</sub> (OH) <sub>2</sub> ]	P21/c	b=7.63A		O <sub>l-x</sub> (4e)		2270;SR,34A,351-353;RRW,
				c=11.65A				342;Pov.,479;Str.Tab.,259;Am.
								Min., 1960, 45, 1087-1093.

NAME	CHEMICAL	STRUCTURAL	SPACE	UNIT CELL DIMENSIONS	MENSIONS	EQUIVALENT	STRUCTURE TYPE	REFERENCES
LAUMONTITE	اکر ا	(300){ (300){ (300){ (300){	20	a=14.724A b=13.075A c=7.559A	β=112.01° Z=4	Ca(41) AI(8J) Si <sub>1-I</sub> (6J) O <sub>I-II</sub> (4I) O <sub>III-VII</sub> (8J)		Sov.Phys.Cryst.,1985,30,624-626;LF;294;RRW,345;Pov., 357;Str.Tab.,489;SR, <u>32A,</u> 483-484.
LAZARENKOITE	(Ca,Fe)FeAs <sub>3</sub> O <sub>7</sub> . 3H <sub>2</sub> O		Orth.	a=21.80Å b=12.64Å c=8.40Å	Z=10			Am.Min.,1982 <u>,67,</u> 415(Abs.); Hölzel,92.
LECONTITE	(NH4,K)Na(SO4). 2H <sub>2</sub> O	Na°S¹ [O₄(H₂O)₂(NH₄,K)] (⊶Mirabilite)	Orth. P2 <sub>1</sub> 2 <sub>1</sub> 2 <sub>1</sub>	a=8.216Å b=12.854Å c=6.232Å	Z=4	S(4a) Na(4a) N(4a) O <sub>I-VI</sub> (4a) 		Acta Cryst.,1967,22,683-687; SR.32A,336-337;Am.Min., 1963,48,180-188;Pov.,595; RRW,350;Str.Tab,,290-291.
LEGRANDITE		Zn <sub>2</sub> As¹ [O₄(OH)(H₂O)] («Spencerite)	Mon. P2 <sub>1</sub> /c	a=12.805Aβ=104°23.3' b=7.933A Z=8 c=10.215A	=104°23.3' Z=8	Znv(4e) As-ıı(4e) Orxii(4e)		Am.Min.,1971, <u>58</u> ,1147-1154; Sov.Phys.Cryst.,1973, <u>17,</u> 747- 748;Pov.,516;Str.Tab.,341.
LENNILENAPEITE K7MQ46(SI,AI)72 (O,OH)216-16H2O			Tric. P 1?	a=21.9Å b=?Å c=12.18Å	? Z=1			Hölzel,230;Am.Min.,1985,7 <u>0,</u> 216(Abs.);Can.Min.,1984, <u>22,</u> 259-263.
LEONITE	K <sub>2</sub> Mg(SO <sub>4</sub> ) <sub>2</sub> .4H <sub>2</sub> O	3∞[K <sup>t9</sup> K¹¹ <sup>t0</sup> ] Mg <sup>t6</sup> S¹ <sub>2</sub> O₅(H <sub>2</sub> O)₄]	Mon. C2/m	a=11.769A b=9.539A c=9.889A	β=95.31° Z=4	K(8j) Mgi(2a) Mgii(2d) Si <sub>i-li</sub> (4i) 		Zelt.Krist.,1985, <u>173,</u> 75-79; Pov.,595,Str.Tab.,288;RRW, 352.
ГОУПЕ	UPO4(OH).H <sub>2</sub> O (?)		Orth. Coca	a=9.74Å b=19.0Å c=10.1Å	Z=5 ?			Am.Min.,1984, <u>69,</u> 214-215 (Abs.);Hötzel,178.
	Cu <sub>3</sub> NO <sub>3</sub> (OH) <sub>5</sub> . 2H <sub>2</sub> O		Orth. Pc2 <sub>1</sub> n	a=5.828Å b=6.769Å c=21.690Å	2=4	Cu-III(4a) N(4a) O <sub>LVI</sub> (4a)		Acta Cryst.,1977, <u>B33,</u> 1422- 1427;Pov.,633;Str.Tab.,234; RRW,357;SR,43 <u>6,</u> 242-243.
LINDACKERITE	H <sub>2</sub> Cu <sub>5</sub> (AsO <sub>4)4</sub> . 9H <sub>2</sub> O		(Tric.) P1	a=8.035A b=10.368Å c=6.453Å	α=79.60° β=84.83° γ=86.17° Z=1			Am.Min.,1996, <u>81,</u> 1517(Abs.); Pov.,516;Str.Tab.,333;HÖtzel, 162.
<b>LITHOSITE</b>	KeAI4SIgO25.2H2O		Mon.	a=15.197A b=10.233A c=8.435A	β=90.21° Z=2			Am.Min.,1984, <u>69,</u> 210(Abs.); Hölzel,222.
LOKKATE - (Y)	CaY4(CO <sub>3)7</sub> .9H <sub>2</sub> O		Orth. Pbmm	a=39.35Å b=6.104Å c=9.26Å	Z=2			Am.Min.,1986, <u>71,</u> 1028-1033; Hölzel,105;Am.Min.,1971, <u>56,</u> 1838(Abs.);
ш	NH4(Fe,AI)(SO <sub>4)2</sub> . 12H <sub>2</sub> O		Cub. Pa3	a=12.302Å	2=4			Am.Min.,1986, <u>71</u> ,229(Abs.); Hölzel,129.
LOUGHLINITE	Na <sub>2</sub> Mg <sub>3</sub> Si <sub>6</sub> O <sub>16</sub> . 8H <sub>2</sub> O		د	a=5.25Å b=26.71Å c=14.66Å	Z=4			Str.Tab.,466;Hözel,236;Am. Min.,1960, <u>45</u> , 270-281.

NAME	CHEMICAL	STRUCTURAL	SPACE	UNIT CELL DIMENSIONS	MENSIONS	EQUIVALENT	STRUCTURE TYPE	REFERENCES
CAMEITE	NO MO (CO.)	NIA IVILON	Pio	0=18 08 0 ==11 780 Å	=11 789Å	Na(R) Mo.(Rf)		Str Tah 288-PPW 363-Pov
COWELLE	15H <sub>2</sub> O	(g){S'O₄]₄(3∞){Mg <sub>7</sub> °	ည်။က - œ	c=13.47Å (	α=106.5°	Mg <sub>11</sub> (1b) S <sub>1-11</sub> (6f)		594;Am.Min., 1970, 55, 378-386;
		S <sub>2</sub> <sup>1</sup> O <sub>36</sub> (H <sub>2</sub> O) <sub>12</sub> ]		Z=3	Z <sub>R</sub> =1	S <sub>III</sub> (2c/2)		Zeit.Krist., 1998, 213, 141-150.
LUDDENITE	Cu <sub>2</sub> Pb <sub>2</sub> Si <sub>5</sub> O <sub>14</sub> .		Mon.	a=7.85Å	β=90.78°			Am.Min., 1983, 68, 643 (Abs.);
	14H20		~	b=20.06Å	Z=4			Hölzel,247;Min.Mag.,1982,46,
				c=14.72Å				363-364.
MAGADIITE	NaSi <sub>7</sub> O <sub>13</sub> (OH) <sub>3</sub> .		Mon.	a=7.25Å	β=96.8°			Am.Min.,1969,54,1583-1591;
	3H2O		~	b=7.25Å	Z=2			1968, <u>53</u> ,2061-2069;Hölzel, 227:Str Tah 485
	210,000	10 11/Agg  -140-14	Mos	70007	07000	PC) 014 (07) 13		70# Krist 1000 150 000 010.
MAKATITE	Na <sub>2</sub> SI <sub>4</sub> O <sub>8</sub> (OH) <sub>2</sub> .	Na Na (H2O)4	Mon. D2,/c	a=7.3881A b=18.094å	β=90.64° 7=4	Sil-iv(4e) Nai(2d Nai(2c) Naii(4e)		Hölzel 226:4m Min 1983 68
	<b>1</b> 20	1200 JOI 04 0 1 1 1 2	217	c=9.5234Å	1			852(Abs.).
MANNARDITE	BaTi <sub>6</sub> (V,Cr) <sub>2</sub> O <sub>16</sub> .	Ti <sub>6</sub> (V,Cr) <sub>2</sub>	Tet.	a=14.357Å	Z=4	Ba <sub>1</sub> (4b) Ba <sub>11</sub> (4a)		Can.Min., 1986, 24, 67-78; 55-66;
	H20	[Ba(H <sub>2</sub> O)O <sub>16</sub> ] <sup>cm</sup>	14 <sub>1</sub> /a	c=5.908Å		Ba <sub>III-IV</sub> (8e)		Hölzel,72;LF,107.
		(≈Hollandite)				(v.occ.)O <sub>I-IV</sub> (16f)		
MARICOPAITE	Ca,Pb,(Si,Al), O,m	Ca <sub>2</sub> Pb <sub>7</sub> (H <sub>2</sub> O) <sub>22</sub>	Orth.	a=19.434Å	Z=1	Pb <sub>i</sub> (4e) Pb <sub>ii</sub> (4d)		Am.Min., 1994, 79, 175-184;
	32H <sub>0</sub>	(3xx)I(Si.Al), O.ml	Cmmm	b=19.702Å		Pbill-Iv(4c)		Can.Min., 1988, 26, 309-313;
	2	(≈Mordenite.Zeolite)		c=7.538Å		(v. occ.)		Hölzel,246;LF,297.
MATTEUCCITE	NaH(SO <sub>4</sub> ).H <sub>2</sub> O	Na°S'[O4H(H2O)]	Mon.	a=8.217Å	B=119°56'	S(4a) Na(4a)		Acta Cryst., 1965, 19,426-432;
		(≈Mirabilite)	Aa	b=7.788Å	Z=4	O <sub>I-IV</sub> (4a)		SR,30,365;Hölzel,131.
				c=7.814A	•			
MCALLISTERITE	Mg <sub>2</sub> (B <sub>6</sub> O <sub>7</sub> (OH) <sub>6</sub> ) <sub>2</sub> .	Mg2°B <sub>12</sub> <sup>1</sup>	Trig.	a=11.549Å a <sub>R</sub> =13.66Å	aR=13.66A	Mg(12c)		SR,41A,421-422;Am.Min.,
	9H <sub>2</sub> O	[O <sub>14</sub> (OH) <sub>12</sub> (H <sub>2</sub> O) <sub>9</sub> ]	R 3c	c=35.537A	$\alpha = 50^{\circ}14^{\circ}$	B <sub>I-II</sub> (36f)		1965, 50, 629-640; Pov., 487;
				9=Z	ZR=2			Str. I ab., 265; KKW, 369.
MELANOCERITE-	(Ce,Ca) <sub>5</sub> (Si,B) <sub>3</sub> O <sub>12</sub>		Amorph.		Z=2			Pov., 389; RRW, 388; Hölzel, 194
- (Ce)	(OH,F).nH <sub>2</sub> O (?)		(Hex.)	c=6.88 Å (a)	(at 600°C)			
MENDOZITE	NaAI(SO <sub>4</sub> ) <sub>2</sub> .11H <sub>2</sub> O	Na°AI°S2[O8(H2O)11]	Mon.	a=21.75Å	β=92°28'	Na(4a) Al(4c)		Am.Min., 1972, 37, 1081-1088;
		(≈Tamarugite)	C2/c	b=9.11A c=8.30Å	Z=4	S(81) O <sub>LIV</sub> (81)		Pov.,597.
META-ALUMINITE	META-ALUMINITE AISO4(OH)4.5H3O		Mon.	a=7.930Å	8=106.74			Zeit.Krist., 1980, 151, 141-152;
			P2, ?	b=16.879Å	Z=2			Encyc.Miner.Nam.,195;Hölzel,
				~				135.
METAVIVIANITE	Fe <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>x</sub> .	Fe <sub>3</sub> P <sub>2</sub> [O <sub>8</sub> (H <sub>2</sub> O) <sub>6</sub>	ا ار ا		α=94.7°			Min.Mag., 1986, 50, 387-391;
	.6H <sub>2</sub> O	(OH) <sub>x.</sub> ] (Subs.d.Symplesite)	٦ -	b=9.08A β=97.15° c=4.65Åv=107.37°Z=?	β=97.15° :107.37°Z=?			K/B,66;H0lzel,170.
MEYERHOFFERI-	CaB <sub>3</sub> O <sub>3</sub> (OH) <sub>5</sub> .H <sub>2</sub> O	Ca <sup>2</sup> (H <sub>2</sub> Q)	Tric.	1	α= <b>90°46</b> ′	Ca(2i) O <sub>I-IX</sub> (2i)		SR,24,430-431;Str.Tab.,257;
<b>1</b>		[6][B2,B"O3(OH)5]	Р 1		β=101°56'	B <sub>I-III</sub> (2i) ·		Pov., 477; RRW, 403-404; Str.
		(≈Inderite)		c=6.46Å γ	r=86°55' Z=2			Tab.,257;Hölzel,115.
MINASRAGRITE	VO(SO <sub>4</sub> ).5H <sub>2</sub> O	V°S'[O <sub>5</sub> (H <sub>2</sub> O) <sub>5</sub> ]	Mon.		B=110.90°	V(4e) S(4e)		Acta Cryst., 1979, <u>B35</u> , 1545-
	•		P2 <sub>1</sub> /c	b=9.716Å	Z=4	O <sub>I-x</sub> (4e)		1550;Am.Min.,1973, <u>58,</u> 531-
				C-12.00EN				. 101,111 ww, 101.

NAME	CHEMICAL	STRUCTURAL	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT	STRUCTURE TYPE	REFERENCES
MOHRITE	(NH4)2Fe(SO4)2.		Mon.	a=6.237Å	B=106°53'			Am.Min., 1965, 50, 805 (Abs.);
	6H <sub>2</sub> O		P2 <sub>1</sub> /c	b=12.613Å	Z=2			RRW,411;Hölzel,130;Str.Tab., 289:Pov595.
MOOREITE	(Mg,Zn,Mn) <sub>15</sub> (SO <sub>4</sub> ) <sub>2</sub> (OH) <sub>26</sub> .8H <sub>2</sub> O	(Mg,Zn) <sub>11</sub> °Zn <sub>4</sub> °S <sub>2</sub> ′ [O <sub>8</sub> (OH) <sub>26</sub> (H <sub>2</sub> O) <sub>8</sub> ]	Mon. P2 <sub>1</sub> /a	a=11.147Å b=20.350Å c=8.202Å	β=92.69° Z=2	Zn <sub>I-II</sub> (4e) Mn(4e) S(4e) Mg <sub>I-IV</sub> (4e) Ma <sub>V</sub> (2b)		Acta Cryst., 1980, <u>B36</u> , 1304- 1311; SR, <u>46A</u> , 357; Pov., 332; Str. Tab., 293; RRW 418.
MORAESITE	Be <sub>2</sub> PO <sub>4</sub> (OH).4H <sub>2</sub> O		Mon. C2/c	a=8.55Å b=36.90Å	β=97°41' Z=12			Pov.,553;Str.Tab.,340;RRW, 418-419;Encyc.Miner.Nam., 204: Hölzel 187
MOSESITE	Hg <sub>2</sub> N(CI,SO <sub>4</sub> ,M <sub>0</sub> O <sub>4,</sub> CO <sub>3</sub> ).H <sub>2</sub> O	(H <sub>2</sub> O)Cl 3∞[N'Hg <sub>2</sub> <sup>[2]κο»</sup> ]° (≈8-Cristobalite)	Cub. F 43m	a=9.524Å	Z=8	Hg(16e) Na(4a)		RRW,421;Pov.,201;Str.Tab., 166;SR,17,440;Höizel,55;LF, 255.
MPOROROITE	AIWO <sub>3</sub> (OH) <sub>3</sub> .2H <sub>2</sub> O		(Tric.) Mon.	a=8.27Å b=9.32Å c=16.40Å	β=92°29′ Z=5			Am.Min.,1973, <u>58</u> ,1112(Abs.); Hölzel,140.
NABAPHITE	NaBaPO <sub>4</sub> .9H <sub>2</sub> O		Cub. P2 <sub>1</sub> 3	a=10.711Å	Z=4			Am.Min.,1983, <u>68</u> ,643-644 (Abs.); Hölzel,165.
NAMUWITE	(Zn,Cu) <sub>4</sub> SO <sub>4</sub> (OH) <sub>6</sub> . 4H <sub>2</sub> O	(Zn,Cu)3°Zn'S' [O4(OH)6(H2O)4]	Trig. P 3	a=8.331Å c=10.54Å	Z=2	Zn <sub>i</sub> (2c) Zn <sub>ii</sub> (6g) S(2d)		Am.Min.,1996,81,238-243; Hölzel,132;Encyc.Miner.Nam., 210
NASINITE	Na <sub>2</sub> B <sub>5</sub> O <sub>8</sub> (OH).2H <sub>2</sub> O Na <sub>2</sub> <sup>19</sup> (H <sub>2</sub> O) <sub>2</sub> {g}[B <sub>2</sub> B <sub>3</sub> <sup>1</sup> O <sub>8</sub> (OH)]	Na <sub>2</sub> <sup>[8]</sup> (H <sub>2</sub> O) <sub>2</sub> {g}[B <sub>2</sub> B <sub>3</sub> <sup>1</sup> O <sub>8</sub> (OH)]	Orth. Pna2 <sub>1</sub>	a=12.015Å b=6.518Å c=11.173Å	2=4	B <sub>I-V</sub> (4a) O <sub>I-IX</sub> (4a) Na <sub>I-II</sub> (4a)		Acta Cryst.,1975, <u>B31,</u> 2405- 2410;Hölzel,191;Encyc.Miner. Nam.,211.
NASTROPHITE	Na(Sr,Ba)PO <sub>4</sub> . 9H <sub>2</sub> O		Cub. P2 <sub>1</sub> 3	a=10.559Å	2=4			Am.Min.,1982, <u>87,857(Abs.);</u> Min.Abs.,83M/4251;Hölzel, 165;K/B,160.
NATROLITE	Na <sub>2</sub> (Al <sub>2</sub> Si <sub>3</sub> )O <sub>10</sub> . 2H <sub>2</sub> O	Na <sub>2</sub> °(H <sub>2</sub> O) <sub>2</sub> {3∞}[Si <sub>3</sub> H <sub>2</sub> O <sub>10</sub> ] (Zeolite)	Orth. Fdd2	a=18.272Å b=18.613Å c=6.593Å	8=Z	Si <sub>I</sub> (8a) Si <sub>II</sub> (16b) AI(16b) Na(16b) 	Na2 <sup>o</sup> (H <sub>2</sub> O) <sub>2</sub> {3∞}[Si₃¹Al₂¹O₁₀] NATROLITE	Acta Cryst.,1984,C40,1658- 1662;LF,289;RRW,429;Pov., 356;Str.Tab.,487.
NATROPHOS- PHATE	Na <sub>7</sub> (PO <sub>4</sub> ) <sub>2</sub> (F,OH). 19H <sub>2</sub> O	Na,°P2 [O <sub>8</sub> (F,OH) (H <sub>2</sub> O) <sub>19</sub> ]	Cub. Fd3c	a=27.755Å	Z=32	P <sub>-II</sub> (32b) Na(192h) F(16a)		Acta Cryst., 1974, <u>B30,</u> 2218- 2224;RRW, 430-431;Am.Min., 1981, <u>66</u> , 879(Abs.);Am.Min., 1973, <u>58, 139(Abs.)</u> .
NEWBERYITE	Mg(PO <sub>3</sub> OH).3H <sub>2</sub> O	Mg°P <sup>[</sup> (O <sub>3</sub> OH(H <sub>2</sub> O) <sub>3</sub> ]	Orth. Pbca	a=10.215Å b=10.681Å c=10.014Å	Z=8	Mg(8c) P(8c) O <sub>LVII</sub> (8c)		Acta Cryst.,1967,23,418-422; RRW,434;Pov.,548;Str.Tab., 334;SR,45A,300-301.
NIAHITE	(NH <sub>4</sub> )(Mn,Mg,Ca) PO <sub>4</sub> .H <sub>2</sub> O		Orth. Pmn2 <sub>1</sub>	a=5.68Å b=8.78Å c=4.88Å	Z=2			Min.Mag.,1983, <u>47,</u> 79-80; Hölzel,162.
NICKELBLÖDITE	Na <sub>2</sub> (Si,Mg)(SO <sub>4</sub> ) <sub>2</sub> . 4H <sub>2</sub> O	Na₂²{g}{(Ni,Mg)°S₂¹ O₅(H₂O)₄] (≈Blödite)	Mon. P2₁/a	a=10.87Å b=8.07Å c=5.46Å	β=100.72° Z=2			Enc.Min.Nam.,215;Min.Mag., 1977, <u>41</u> ,37-41;Hölzel,130.

NICKELBOUS- SINGAULTITE	FORMULA	FORMULA	GROUP	UNIT CELL DIMENSIONS	MENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
SINGAULTITE	(NH <sub>4</sub> ) <sub>2</sub> (Ni,Mg)		Mon.	a=9.181Å	β=106°57"	S(4e) NH <sub>4</sub> (4e)		Acta Cryst., 1963, 16, 823-829;
	(SO <sub>4</sub> ) <sub>2</sub> .6H <sub>2</sub> O		P2 <sub>1</sub> /a	b=12.459Å	Z=2	O <sub>I-IV</sub> (4e)		Am.Min., 1986, 71, 1545(Abs.);
THEORY				C=0.438A				ACIA CRST., 1904, 17, 14/8-14/9
	Ca3(EC(CH) <sub>2</sub> ) <sub>3</sub> .		Mon.	a=13.119A	β=118.40			Min.Abs., 79-2130; Am.Min.,
	7 2 2 2		0/70	c=9.526Å	<b>5=7</b>			1962,47,172(Abs.);Pov.,473; Hölzel 117
NOBLEITE	CaB <sub>6</sub> O <sub>6</sub> (OH), 3H,O	Ca <sup>ltoj</sup> (H <sub>2</sub> O) <sub>2</sub>	Mon.	a=14.56Å	B=111045			Am Min 1981 46 560-571
		{2∞}[B <sub>3</sub> 'B <sub>3</sub> <sup>t</sup> (OH) <sub>2</sub> ]	P2 <sub>1</sub> /a	b=8.01Å	Z=4			Pov. 487-488:RRW 440:Str.
		(=Tunellite)		c=9.83Å				Tab., 265;Hölzel,119.
OTWAYITE	Ni <sub>2</sub> CO <sub>3</sub> (OH) <sub>2</sub> .H <sub>2</sub> O		orth.	a=10.18Å	Z=8			Am.Min., 1977, <u>62</u> , 999-1002;
			ć	b=27.4Å c=3.22Å				Hölzel, 106.
OYELITE	Ca <sub>10</sub> B <sub>2</sub> Si <sub>8</sub> O <sub>29</sub> .		orth.	a=11.25Å	Z=1 ·			Am.Min., 1986, 71, 230 (Abs.);
	12H <sub>2</sub> O		7	b=7.25A c=20.46Å				Hölzel,220.
PACHNOLITE	NaCaAIF <sub>6</sub> .H <sub>2</sub> O	Na <sup>[12]</sup> {200}{ Al°	Mon.	a=12.117Å	β=90°37'			Can.Min., 1983, 21, 561-566;
		(g)[Ca <sup>12</sup> F <sub>6</sub> (H <sub>2</sub> O)] ]	C2/c	b=10.414A	Z=16			RRW,455;Str.Tab.,162;Pov.,
T	0.04	2 100 00 100 W		C=15.680A				664;Hölzel,52.
PALYGORSKIIE	(Mg,Al)2514O10	(Mg,Al)2 (H2O)4(OH)	Mon.	a≈12.7A	β≈95°		(Mg,Al) <sub>2</sub> ′(H <sub>2</sub> O) <sub>4</sub> (OH)	RRW,457;Hölzel,236;Pov.,420;
		{2∞}[SI4'O₁0]	CZ/B	b≈17.9A c≈5.2Å	Z=4		{2∞}[Si₄'O₁₀] PALYGORSKITE	Str.Tab.,466;Am.Min.,1977, <u>62,</u> 784-792:RRW.457
PARABARIO-	ŀ	Ba <sup>co</sup> ⊓ <sub>2</sub> coTa,°		A-7 4290Å	7=3	Ra/3h) Ta./3a)		Can Min 1096 24 RE 483-1 E
MICROLITE	2H <sub>2</sub> O	[O <sub>10</sub> (H <sub>2</sub> O) <sub>2</sub> (OH) <sub>2</sub> □ <sub>2</sub> ] <sup>Os</sup>	В В В	c=18.505Å	)	Ta <sub>ll</sub> (9b)		140;Hölzel,68.
		(Dist.defect d.Pyrochlore)				(rhomb.descr.)		
<b>PARABRANDTITE</b>	Ca <sub>2</sub> Mn(AsO <sub>4)2</sub> .	Ca <sub>2</sub> <sup>lgl</sup> Mn°As <sub>2</sub> t	Tric.	a=5.89Å	$\alpha = 96.77^{\circ}$			Am.Min., 1988, 73, 1496 (Abs.);
	2H <sub>2</sub> O	{2∞}[O <sub>8</sub> (H <sub>2</sub> O) <sub>2</sub> ]	<u>F</u>	b=7.031Å	$\beta = 109.32^{\circ}$			Hölzel, 164.
		(=Talmessite)		c=5.64Å	γ=108.47° Z=1			
PARABUTLERITE FeSO <sub>4</sub> (OH).2H <sub>2</sub> O	FeSO <sub>4</sub> (OH).2H <sub>2</sub> O	Fe°S'[O4(OH)(H <sub>2</sub> O) <sub>2</sub> ]	Orth.	a=7.38Å	Z=8	Fe(8d) S <sub>I-II</sub> (4c)		Bull.Min., 1970, 93, 185-189; SR,
			Pmnb	b=20.13Å c=7.22Å		O <sub>I-IV</sub> (8d)O <sub>V-X</sub> (4c)		35A,575-576;Hölzel,134;Str. Tab, 293:Pov, 599
<b>PARANATROLITE</b>	Na <sub>2</sub> (Al <sub>2</sub> Si <sub>3</sub> )O <sub>10</sub> .		orth.	a=19.07Å	Z=8			Can.Min., 1980, 18, 85-88;
	3H <sub>2</sub> O		Fmm2 ?	b=19.03Å c=6.58Å				Encyc.Miner.Nam.,230;Hölzel, 243.
<b>PARASCHOLZITE</b>	CaZn <sub>2</sub> (PO <sub>4)2</sub> .2H <sub>2</sub> O		Mon.	<b>∞</b> ∢	β=106°27"			Am.Min., 1981, 66, 843-851;
			:: ဗိ	b=7.422A c=6.674Å	Z=4			Hölzel,162.
PENKVILKSITE	Na <sub>4</sub> Ti <sub>2</sub> Si <sub>8</sub> O <sub>22</sub> .5H <sub>2</sub> O		ا ~	a=7.48Å	√=90°			Am.Min., 1975, <u>60</u> , 340-341
			Pnca ?	b=8.77A c=?				(Abs.);Hölzel,223;Encyc.Miner. Nam.,234.

NAME	CHEMICAL	STRUCTURAL FORMULA	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
PENTAHYDRO- BORITE	H <sub>2</sub> O	Ca <sup>17</sup> (9)(B)	Tric. P 1	a=7.845Å b=6.525Å	α=111.62° β=111.19°	Ca(2i) B <sub>I-II</sub> (2i) O <sub>I-IX</sub> (2i) H <sub>I-X</sub> (2i)		Sov.Phys.Cryst.,1977,22,35- 36;SR,43A,227;Hölzel,114;
				c=8.124Å	γ=73.44° Z=2			Pov.,4/1;Min.Abs.,/4-959.
PHARMACOLITE	Ca(AsO <sub>3</sub> OH).2H <sub>2</sub> O (2∞)(Ca <sup>[8]</sup> As¹O <sub>4</sub> H	(2∞){Ca <sup>(B)</sup> As¹O₄H	Mon.	a=5.9745Å β=1	β=114°50'	Ca(4a) As(4a)		Acta Cryst.,1969, <u>B25,</u> 1544-
		(H <sub>2</sub> O) <sub>2</sub> ] (≈Gvnsiim)	75	D=15.4340F	4=7 h	(H <sub>2</sub> O) <sub>[-1]</sub> (4a)		37A,302;Pov.,524;Am.Min.,
		(mpsdfo~)				( - VIL. ( - 2 · V		1979,64,1248-1254;LF,248.
PHILIPSBURGITE	(Cu,Zn) <sub>6</sub> (AsO <sub>4</sub> ,PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>6</sub> .	(Cu,Zn) <sub>6</sub> (As,P) <sub>2</sub> [O <sub>8</sub> (OH) <sub>6</sub> (H <sub>2</sub> O)]	Mon. P2 <sub>1</sub> /c	a=12.33Å b=9.20Å	β=96.92° Z=4			Can.Min.,1985, <u>23,</u> 255-258; Hölzel,167.
РНОЅРНО-	Zn <sub>2</sub> (Fe,Mn)(PO <sub>4</sub> ) <sub>2</sub> .	Zn <sup>[6]</sup> Zn <sup>P</sup> 2 [O <sub>6</sub> (H <sub>2</sub> O) <sub>4</sub> ]	Mon.	a=10.378Å	1	β=121.14° Fe(2a) Zn(4e)		Am.Min., 1977, 62,812-817; K/B, 57,58:SP 26 434 261
	O.	(≈Hoperte)	P <b>Z</b> 4/C	c=10.553Å	7=7	(a+)\r!-\r(a+)\r!-\r		97-30,575,53;RRW,477;K/B, 57-58.
PHOSPHORRÖ-	Mg(PO <sub>3</sub> OH).7H <sub>2</sub> O	Mg°P'[O <sub>3</sub> (OH)(H <sub>2</sub> O) <sub>7</sub>	Mon.	a=6.574Å	β=95°11'			Zeit.Krist., 1973, 137, 246-255;
SSLEKIIE		(≈Kossiertte)	2/20	D=25.36A c=11.32Å	g=7			336;Hölzel, 163.
PICKERINGITE	MgAl <sub>2</sub> (SO <sub>4</sub> ) <sub>4</sub> .		Mon. P2	a=20.8Å b=24.2Å	β=96°33' Z=4			Str.Tab.,285;Pov.,753,598; RRW,478;Hölzel,129.
	2			c=6.18Å				
PICROMERITE	K <sub>2</sub> Mg(SO <sub>4</sub> ) <sub>2</sub> .6H <sub>2</sub> O	K2 <sup>1/1</sup> Mg°S2 <sup>1</sup> [O <sub>8</sub> (H <sub>2</sub> O) <sub>6</sub> ]	Mon.	a=9.072Å		Mg(2a) K(4e)		Zeit.Knst., 1965, 122, 161-1 /4;
-		(=Boussingauitite)		b=12.212A c=6.113Å	7=7	S(4e) Oliv(4e) Hivi(4e)		Pov., 595; Hölzel, 129.
PIMELITE	Ni <sub>3</sub> Si <sub>4</sub> O <sub>10</sub> (OH) <sub>2</sub>	Ni <sub>3</sub> <sup>0</sup> (H <sub>2</sub> O)(OH) <sub>2</sub>	2	خ				Am.Min., 1979, 64, 615-625;
		{2∞}[Si <sub>4</sub> O <sub>10]</sub> (2n)c						RRW,481;Str.Tab.,446;Pov.,
PIRSSONITE	Na <sub>2</sub> Ca(CO <sub>3</sub> ) <sub>2</sub> 2H <sub>2</sub> O	(20) Na [6]Ca[8]	Orth	a=11.32Å	Z=8	Ca(8a) Na(16b)		Acta Cryst., 1967, 23, 763-766;
	7	(H <sub>2</sub> O) <sub>2</sub> {g}[C <sup>tr</sup> O <sub>3]2</sub> ]	Fdd2	b=20.06Å		O <sub>LIV</sub> (16b)		SR,32A,416-417;Pov.,619;Str.
PLANCHÉITE	Cu <sub>8</sub> (Si <sub>4</sub> O <sub>11</sub> ) <sub>2</sub> (OH) <sub>4</sub> .	Cu <sub>8</sub> <sup>[6/4]</sup> (OH) <sub>4</sub> (H <sub>2</sub> O)	Orth.	a=19.043Å	Z=4	Cul-Iv(8d)		Am.Min., 1977, <u>62</u> , 491-502;
		{1∞}{Sig <sup>t</sup> O <sub>22</sub> ] <sup>2.cx</sup>	Pcnb	b=20.129Å		Si <sub>I-IV</sub> (8d)		Pov.,413;LF,208;SR,43A,322-
		(≈Shattuckite, ≈Tremolite)		c=5.269A		O <sub>I-XIII</sub> (8d) O <sub>XIV</sub> (4c)		323;Hölzel,214;RRW,483;Str. Tab.,416.
POKROVSKITE			Mon.	a=9.43Å	β=96.6°			Am.Min., 1985, 70, 217 (Abs.);
	0,5H <sub>2</sub> O		P2 <sub>1</sub> /a	b=12.27Å c=3.395Å	Z=4			Hölzel, 106.
POLLUCITE		(Cs,Na)(H <sub>2</sub> O) <sub>n</sub>	Cub.	a=13.69Å	Z=16	Cs(16b)		Zeit.Krist., 1969, <u>129</u> , 280-302;
	nH <sub>2</sub> O	{3∞}[Si₂ <sup>t</sup> Al¹O <sub>6</sub> ] (Zeolite)	l a3d			(Si,Al)(48g) O(96h)		LF,293;RRW,487;Can.Min., 1994,32.69-80.
POSNJAKITE	Cu <sub>4</sub> SO <sub>4</sub> (OH) <sub>6</sub> .H <sub>2</sub> O	{2∞}[Cu <sub>4</sub> °S¹O₄(OH) <sub>6</sub>	Mon.	a=10.578Å	β=117.98	1		Zeit.Krist.,1979,149,249-257;
		H <sub>2</sub> O)]	Ра	b=6.345Å c=7.863Å	Z=2	O <sub>I-XI</sub> (2a)		SR,45A,335-336;RRW,490; Pov., 754,598;Str.Tab.,292.

NAME	CHEMICAL FORMULA	STRUCTURAL FORMULA	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT	STRUCTURE TYPE	REFERENCES
POTASSIUM	KAI(SO <sub>4)2</sub> .12H <sub>2</sub> O	K^Al°S <sub>2</sub> [O <sub>8</sub> (H <sub>2</sub> O) <sub>12</sub> ]	Cub. Pa3	a=12.157Å	Z=4	K(4b) Al(4a) S(8c) O <sub>I</sub> (8c) O <sub>II-III</sub> (24d)		Acta Cryst.,1967, <u>22,</u> 793-800; SR, <u>32A,</u> 33 <del>9</del> -343;Pov.,597; RRW,490.
PROSPERITE	CaZn <sub>2</sub> (AsO <sub>4)2</sub> .H <sub>2</sub> O	{3∞}[Ca <sup>[9]</sup> Zn <sub>2</sub> <sup>[5]</sup> As₂¹O <sub>8</sub> (H₂O)]	Mon. C2/c	a=19.238Å b=7.731Å c=9.765Å	β=104.47° Z=8	Ca(8f) Zn <sub>I-II</sub> (8f) As <sub>I-II</sub> (8f) O <sub>I-IX</sub> (8f)		Zeit.Krist.,1982 <u>,158</u> ,33-42; Hölzel,152.
RAITE	(Na,Ca) <sub>4</sub> (Mn,Ti,Fe) <sub>3</sub> Si <sub>8</sub> (O,OH) <sub>24</sub> .9H <sub>2</sub> O		Orth. C222	a=30.6Å b=5.31Å c=18.20Å	Z=4			Am.Min.,1973 <u>,58</u> ,1113(Abs.); Hölzel,231.
RAMSBECKITE	(Cu,Zn) <sub>15</sub> (SO <sub>4</sub> ) <sub>4</sub> (OH) <sub>22</sub> .6H <sub>2</sub> O		Mon. P2 <sub>1</sub> /a	a=16.066Å b=15.577Å c=7.102Å	β=90.20° Z=2			Am.Min.,1987 <u>,72</u> ,225(Abs.); Hölzel,132;Am.Min.,1989, <u>74,</u> 505(Abs.).
RANSOMITE	CuFe <sub>2</sub> (SO <sub>4)4.</sub> 6H <sub>2</sub> O	Cu°Fe₂°S₄¹ [O₁ϵ(H₂O)₅] (≈Römerite)	Mon. P2 <sub>1</sub> /a	a=4.811Å b=16.217Å c=10.403Å	β=93°1′ Z=2	Cu(2a) Fe(4e) Si-II(4e) OI-VIII(4e)		Am.Min.,1970 <u>,55,</u> 729-734; RRW,510;Pov.,596;Str.Tab., 285;SR <u>,35A</u> ,436-437.
REDINGTONITE	(Fe,Mg,Ni)(Cr,Al) <sub>2</sub> (SO <sub>4</sub> ) <sub>4</sub> .22H <sub>2</sub> O	(Fe,Mg,Ni)°(Cr,Al) <sub>2</sub> ° S₄ <sup>t</sup> [O₁ <sub>6</sub> (H <sub>2</sub> O) <sub>22</sub> ] (≈Halotrichite)	(Mon.) P2	a=20.8Å b=24.2Å c=6.18Å	β=°96'34 Z=4			Pov.,755,598;Str.Tab.,285; RRW,512;Hölzel,129.
RHOMBOCLASE	HFe(SO <sub>4)2</sub> .4H <sub>2</sub> O		Orth. Pnma	a=9.73Å b=18.29Å c=5.43Å	Z=4			Min.Mag.,1974, <u>39</u> ,610-612; SR, <u>41A</u> ,350;Pov.,604;Str.Tab., 284;Hölzel,128.
RIVERSIDEITE	Ca <sub>5</sub> Si <sub>6</sub> O <sub>16</sub> (OH) <sub>2</sub> .2H <sub>2</sub> O	Ca₁o(OH)₄{2∞}[Si₁² O₃₁(H₂O)₄] (≈Tobermorite)	Orth. C222 <sub>1</sub>	a=11.3Å b=7.3Å c=18.0Å	Z=4			Pov.,435,Min.Mag.,1954 <u>,30,</u> 29 3-305; Hölzel,220;RRW,521.
ROGGIANITE	Ca <sub>15</sub> (Si,Al,Be) <sub>48</sub> O <sub>90</sub> (OH) <sub>16</sub> .34H <sub>2</sub> O		Tet. I 4/mcm	a=18.33Å c=9.16Å	<b>Z</b> ≈1			Am.Min.,1992 <u>,77</u> ,452(Abs.); Am.Min.,1983 <u>,68</u> ,852(Abs.); Min.Mag.,1988, <u>52,2</u> 01-206.
ROSELITE	Ca <sub>2</sub> (Co,Mg) (AsO <sub>4</sub> ) <sub>2</sub> .2H <sub>2</sub> O	Ca <sub>2</sub> <sup>[7]</sup> {1∞}[(Co,Mg)° As <sub>2</sub> ¹O <sub>8</sub> (H <sub>2</sub> O) <sub>2</sub> ] (=Brandtite)	Mon. P2 <sub>1</sub> /c	a=5.801Å b=12.898Å c=5.617Å	β=107.42° Z=2			SR, <u>43A,</u> 272-273;Pov.,519- 520;Str.Tab.,337;RRW,526; Hölzel,163.
RÖSSLERITE	Mg(AsO <sub>3</sub> OH).7H <sub>2</sub> O	Mg°As¹[O₃OH(H₂O)7]	Mon. C2/c	a=6.6918Å b=25.744Å c=11.538Å	β=95.15° Z=8	Mg <sub>I-II</sub> (4e) As(8f) O <sub>I-IV</sub> (8f)		Acta Cryst.,1973, <u>B29,</u> 286-292; Zeit.Krist.,1973, <u>137</u> ,194-219; SR, <u>39A,</u> 296-297;Pov.,516.
ROSTITE	AISO <sub>4</sub> (F,OH).5H <sub>2</sub> O		Orth. Pcab	a=11.181Å b=13.048Å c=11.885Å	Z=8			Am.Min.,1981, <u>66,</u> 1102-1103 (Abs.);Hölzel,134;Am.Min., 1979, <u>64,</u> 1331(Abs.).
ROUSEITE	Pb <sub>2</sub> Mn(AsO <sub>3)2</sub> . 2H <sub>2</sub> O		Tric. P1	a=6.36Å b=7.29Å c=5.54Å	$\alpha = 97.3^{\circ}$ $\beta = 114.2^{\circ}$ $\gamma = 106.0^{\circ}$ Z = 1			Am.Min.,1986, <u>71,</u> 1034-1036; Hölzel,91.

NAME	CHEMICAL	STRUCTURAL	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
SACROFANITE	(Na,Ca) <sub>9</sub> (Si,Al) <sub>12</sub> O <sub>24</sub> (OH,SO <sub>4</sub> ) <sub>4</sub> . nH <sub>2</sub> O		Hex. P63mc	a=12.865Å c=72.240Å	Z=14			Am.Min.,1981, <u>66</u> ,1100(Abs.); Hölzel,240.
SANTITE	KB <sub>5</sub> O <sub>6</sub> (OH) <sub>4</sub> .2H <sub>2</sub> O		Orth. Aba2	a=11.10Å b=11.18Å c=9.08Å	Z=4			Am.Min.,1971, <u>56</u> ,636(Abs.); Hölzel,116;RRW,536;Pov.,479.
SASAITE	(AI,Fe) <sub>6</sub> (PO <sub>4</sub> ,SO <sub>4</sub> ) <sub>5</sub> (OH) <sub>3</sub> .36H <sub>2</sub> O	,	Orth.	a=21.50Å b=30.04Å c=92.06Å	Z=20 ?			Min.Mag.,1978, <u>42</u> ,401-404; Hölzel,169.
SBORGITE	NaB <sub>5</sub> O <sub>6</sub> (OH) <sub>4</sub> .3H <sub>2</sub> O	1	Mon. C2/c	a=11.119Å b=16.474Å c=13.576Å	β=112°50' Z=8	Na <sub>I-II</sub> (4e) B <sub>I-V</sub> (8f) O <sub>I-XIII</sub> (8f)		Acta Cryst.,1972, <u>B28,</u> 3559- 3567;SR, <u>38A,</u> 292-293;RRW, 540;Pov.,479;Str.Tab.,259.
SCARBROITE	Al <sub>5</sub> CO <sub>3</sub> (OH) <sub>13</sub> . 5H <sub>2</sub> O	Als°c″ [O₃(OH)₁₃(H₂O)₅lʰ	(Tric.)	a=9.94Å b=14.88Å c=26.47Å	$\alpha = 98.7^{\circ}$ $\beta = 96.5^{\circ}$ $\gamma = 89.0^{\circ}$ Z = 9.7			Min.Mag.,1980, <u>43</u> ,615-618; Min.Mag.,1960, <u>32</u> ,353-362; Am.Min.,1958, <u>43</u> ,384(Abs.); RRW,541;Pov.,328;Hölzel,107.
SCHOLZITE	CaZn <sub>2</sub> (PO <sub>4)2.</sub> 2H <sub>2</sub> O	Ca°Zn <sub>2</sub> P <sub>2</sub> [O <sub>8</sub> (H <sub>2</sub> O) <sub>2</sub> ]	Orth. Pbc2 <sub>1</sub>	a=17.149Å b=22.236Å c=6.667Å	Z=12	Ca <sub>I-III</sub> (4a) Zn <sub>I-VI</sub> (4a)		Am.Min.,1975, <u>60</u> ,1019-1022; Am.Min.,1981, <u>66</u> ,843-851; RRW,545;Pov.,547Str.Tab., 330.
SCHULENBERGI- TE	(Cu,Zn) <sub>7</sub> (SO <sub>4</sub> ,CO <sub>3</sub> ) <sub>2</sub> (OH) <sub>10</sub> . 3H <sub>2</sub> O		Trig. P3	a=8.249Å c=7.183Å	Z=1			Am.Min.,1985 <u>,70</u> ,438(Abs.); Hölzel,132.
SCOLECITE	Ca(Si <sub>3</sub> Al <sub>2</sub> )O <sub>10</sub> .3H <sub>2</sub> O	Ca <sup>l/1</sup> (H <sub>2</sub> O) <sub>3</sub> {3∞}{Si₃ <sup>t</sup> Al₂ <sup>t</sup> O₁₀] (≈Natrolite,Zeolite)	Mon. Cc	a=18.508Å b=18.981Å c=6.527Å	β=90.64° Z=4	Ca(4a) Si⊦⊪(4a) 	Ca <sup>l7(</sup> (H₂O)₃ {3∞}[Si₃¹Al₂¹O₁₀] SCOLECITE	Zeit.Krist.,1984, <u>166,</u> 219-223; Acta Cryst.,1979, <u>B35,</u> 1877- 1880;Pov.,356;LF,291.
SENEGALITE	Al <sub>2</sub> PO <sub>4</sub> (OH) <sub>3</sub> .H <sub>2</sub> O	Al <sup>o</sup> Al <sup>tosy</sup> [P <sup>1</sup> [O <sub>4</sub> (OH) <sub>3</sub> (H <sub>2</sub> O)]	Orth. P2 <sub>1</sub> nb	a=7.675Å b=9.711Å c=7.635Å	Z=4	Al <sub>-II</sub> (4a) P(4a) O <sub>I-IV</sub> (4a)		Am.Min.,1979, <u>64</u> ,1243-1247; K/B,60-61;Am.Min.,1977 <u>,62,</u> 595(Abs.);SR,4 <u>5A,</u> 303-304.
SEPIOLITE	Mg <sub>4</sub> Si <sub>6</sub> O <sub>15</sub> (OH) <sub>2</sub> . 6H <sub>2</sub> O	Mg₄°(H₂O) <sub>6</sub> (OH) <sub>2</sub> {2∞}{Si₅¹O₁₅] (≈Palygorskite)	Orth. Pncn	a=13.4Å b=26.8Å c=5.28Å	Z=4	Mgıv(4c) Oı(4d) Oviii(8e)Sil-iii(8e) 	Mg₄°(H₂O) <sub>6</sub> (OH) <sub>2</sub> {2∞}{Sie <sup>t</sup> O₁5] SEPIOLITE	SR <u>.20</u> ,436-437;SR <u>.21</u> ,457; Pov.,420-421;Str.Tab.,486; LF,241.
SHAFRANOVSKI- TE	(Na,K) <sub>6</sub> (Mn,Fe) <sub>3</sub> Si <sub>9</sub> O <sub>24</sub> .6H <sub>2</sub> O		Trig. P3 <sub>1</sub> m	a=14.58Å c=21.01Å	Z=6			Am.Min.,1983, <u>68</u> ,644(Abs.); Hölzel,247.
SHERWOODITE	Ca4.5AIV <sub>14</sub> O <sub>40</sub> .28H <sub>2</sub> O	Ca4.5(H <sub>2</sub> O) <sub>28</sub> {3∞}[Al°V <sub>14</sub> °O <sub>40</sub> ]	Tet. I 4₁amd	a=28.06Å c=13.56Å	Z=8	AI(8c) Ca(16g) Vı(16h) V.ii(16f)Vıv-v(32i) 		Am.Min.,1978, <u>63</u> ,863-868;Am. Min.,1958, <u>43</u> ,749-755;Pov., 501-502;Str.Tab.,222;SR, <u>44A,</u> 202-203.
SMOLIANINOVITE	(Co,Ni,Mg,Ca) <sub>3</sub> (Fe <sup>+3</sup> ,Al) <sub>2</sub> (AsO <sub>4</sub> ) <sub>4</sub> .11H <sub>2</sub> O		Orth.	a=6.40Å b=11.72Å c=21.9Å	Z=2 ?			Am.Min.,1974 <u>,59</u> ,1141;Hölzel, 164.

NAME	CHEMICAL	STRUCTURAL	SPACE	UNIT CELL DIMENSIONS	MENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
SODDYITE	(UO <sub>2</sub> ) <sub>2</sub> SiO <sub>4</sub> .2H <sub>2</sub> O	(H <sub>2</sub> O) <sub>2</sub> {1∞}[(UO <sub>2</sub> ) <sub>2</sub> Si <sup>*</sup> O <sub>4</sub> ]	Orth. Fddd	a=8.32Å b=11.21Å c=18.71Å	Z=8			Am.Min.,1981, <u>66</u> ,610-625; Hölzel,195;RRW,568;Pov.,456; Str.Tab.,387.
SODIUM ALUM	NaAl(SO <sub>4</sub> ) <sub>2</sub> .12H <sub>2</sub> O	Na°AI°S₂[O <sub>8</sub> (H₂O) <sub>12</sub> ]	Cub. Pa3	a=12.213Å	Z=4	Na(4b) S(8c) O <sub>I</sub> (8c) O <sub>II</sub> (24d) 		Acta Cryst., 1967, <u>22,</u> 182-187; Pov., 597-598; SR, <u>32A,</u> 339- 343; Hölzel, 129.
SONORAITE	0		Mon. P2₁c	a=10.984Å b=10.268Å c=7.917Å	β=108.49° Z=8			Am.Min.,1968, <u>53,</u> 1828-1832; SR. <u>40A</u> ,311;RRW,570;Pov., 565;Hölzel,93.
SPENCERITE	Zn4(PO4)2(OH)2. 3H2O	Zn² <sup>2</sup> Zn² <sup>1</sup> P² [O <sub>8</sub> (OH)²(H²O)₃]	Mon. P2/c	a=10.448Å b=5.282Å c=11.208Å	β=116°44′ Z=2	Zn <sub>II</sub> (2a) Zn <sub>II</sub> (2e) Zn <sub>III</sub> (4g) P(4g) 		Min.Mag., 1972, <u>38</u> ,687-692; SR. <u>31A,</u> 190-191;Pov.,549- 550;Str.Tab.,341.
STANLEYITE	VOSO4.6 H <sub>2</sub> O		Orth. ?	a=12.12Å b=9.71Å c=14.92Å	Z=8			Hölzel,135;Min.Mag.,1982, <u>45,</u> 163-166.
STELLERITE	)	Ca <sup>t9</sup> (H <sub>2</sub> O) <sub>7</sub> {3∞}[Si <sup>-</sup> Al2 <sup>+</sup> O <sub>18</sub> ] (≈Stilbite,Zeolite)	Orth. Fmmm	a=13.599Å b=18.222Å c=17.863Å	Z=8			SR. <u>41A</u> ,401;LF,299;Pov.,354; Str.Tab.,490;SR. <u>45A</u> ,375;Am. Min.,1968, <u>53</u> ,511(Abs.);Bull. Min.,1975, <u>98</u> ,11-18.
STILPNOMELANE	(K,Ca,Na) (Fe,Mg,Al) <sub>12</sub> (Si,Al) <sub>16</sub> (O,OH) <sub>54</sub> . nH <sub>2</sub> O		Tric. P 1	a≈21.724Å b≈21.724Å c=17.740Å	α=124° β=96° γ=120° Z=6?			Min.Mag.,1972, <u>38</u> ,693-711; Pov.,436;Str.Tab.,442;RRW, 583-584;Min.Mag.,1978, <u>42;</u> 361-368.
STOKESITE	CaSnSi <sub>3</sub> O <sub>9</sub> .2H <sub>2</sub> O	Ca <sup>l8j</sup> Sn <sup>t6j</sup> (H <sub>2</sub> O) <sub>2</sub> {1∞}[Si₃ <sup>t</sup> O₅]	Orth. Pnna	a=14.465Å b=11.625Å c=5.235Å	Z=4	Ca(4d) Sn(4b) Si <sub>(</sub> (4d) Si <sub>ii</sub> (8e) 		Min.Mag., 1963, 33, 615-617; SR. <u>28,</u> 262-263; Pov., 419; Str. Tab., 428.
STRASHIMIRITE	Cu <sub>4</sub> (AsO <sub>4</sub> ) <sub>2</sub> (OH) <sub>2</sub> . 2.5H <sub>2</sub> O	Cu4°As <sub>2</sub> ¹ [O <sub>6</sub> (OH) <sub>2</sub> (H <sub>2</sub> O) <sub>2.5</sub> ]	Mon. P2/m	a=9.71Å b=18.85Å c=8.94Å	β=97°12' Z=6			Am.Min., 1969, <u>54</u> , 1221 (Abs.); Pov., 516; Str. Tab., 340; RRW, 585-586; Hölzel, 167.
STRÄTLINGITE	Ca <sub>2</sub> Al <sub>2</sub> SiO <sub>7</sub> .8H <sub>2</sub> O		Trig. R 3m	a=5.753Å c=37.82Å	Z=3			Am.Min., 1992, 77,674-675; Hölzel, 192; Am.Min., 1977, <u>62,</u> 395(Abs.).
STRINGHAMITE	CaCuSiO <sub>4</sub> .H <sub>2</sub> O	Ca <sup>l7l</sup> H₂O {2∞}[Cu <sup>sq</sup> {g}[Si <sup>†</sup> O₄] ]	Mon. P2 <sub>1</sub> /c	.≪	β=102.96° Z=4			Min.Abs.,85M/3792;Am.Min., 1976 <u>,61,</u> 189-192;Hölzel,191.
STRUVITE	<u>Q</u>	Mg°P′(NH4) [O4(H2O)6]	Orth. Pmn2 <sub>1</sub>	a=6.955Å b=6.142Å c=11.218Å	Z=2	P(2a) Mg(2a) N(2a) O <sub>I-II</sub> (2a) OIII(4b)		Acta Cryst., 1986, <u>B42</u> , 253-258; SR, <u>55A,</u> 329-330; Pov., 548; Str. Tab., 337; RRW, 588-589.
SUOLUNITE	Ca <sub>2</sub> Si <sub>2</sub> O <sub>5</sub> (OH) <sub>2</sub> .H <sub>2</sub> O		Orth. Fdd2	a=11.02Å b=19.74Å c=6.08Å	Z=8	Ca(16b) Si(16b) O <sub>I:I</sub> (8a) O <sub>II:-V</sub> (16b)		SR, <u>31A,</u> 236;Min.Abs.,75-871; Am.Min.,1967, <u>52,</u> 560-561; Pov.,403;Str.Tab.,579,391; RRW, 592.

NAME	CHEMICAL	STRUCTURAL	SPACE	UNIT CELL D	UNIT CELL DIMENSIONS	EQUIVALENT	STRUCTURE TYPE	REFERENCES
SYNGENITE	K <sub>2</sub> Ca(SO <sub>4</sub> ) <sub>2</sub> .H <sub>2</sub> O		Mon.	a=6.225Å	B=104.153°	Ca(2e) K(4f)		Sov. Phys. Cryst., 1978, 23, 141-
			P2,/m	b=7.127Å	Z=2	S <sub>I-II</sub> (2e) O <sub>I-V</sub> (2e)		143;SR,44A,271-272;SR,32A,
			•	c=9.727Å				335-336;Pov.,594;Str.Tab.,
								291;SR,33A,518-520.
TALMESSITE	Ca <sub>2</sub> Mg(AsO <sub>4</sub> ) <sub>2</sub> .	Ca <sub>2</sub> <sup>[8]</sup> Mg°As <sub>2</sub> <sup>1</sup>	Tric.	a=5.874Å	α=97.3°			SR,43A,356;RRW,601-602;
	2H <sub>2</sub> O	[O <sub>8</sub> (H <sub>2</sub> O) <sub>2</sub> ]	<u>С</u>	b=6.943Å	B=108.7°			Pov.,519-520;Str.Tab.,337;Am.
		(=Parabrandtite)		c=5.537Å	γ=108.1°			Min., 1988, 73, 1496 (Abs.).
		0.		•	Z=1			
TAMARUGITE	NaAI(SO <sub>4</sub> ) <sub>2</sub> .6H <sub>2</sub> O	Na"Al"S <sub>2</sub> [ O <sub>8</sub> (H <sub>2</sub> O) <sub>6</sub> ]	Mon.	a=7.353Å		Na(4e) Al(4e)		Am.Min.1969,54,19-30;SR,
			P2 <sub>1</sub> /a	b=25.225A   c=e 007Å	Z=4	O <sub>I-VIII</sub> (4e)		34A,310-311;HOIZEI,13U;POV.,
	10-17			0.00.0		O-1 (40)		Am Min 1000 72 034/Abc >:
HOMEIZEKIIE	Pb(Cu, Zn) <sub>2</sub> (ASO <sub>4</sub> ) <sub>2</sub> . 2H <sub>2</sub> O							Hölzel, 162.
THOMSENOLITE	NaCaAIF <sub>6</sub> .H <sub>2</sub> O	Na <sup>[12]</sup> {3∞}	Mon.	a=5.583Å	8=96°26'	Ca(4e) Na(4e)		Acta Cryst., 1967, 23, 162-166;
	•	[Ca <sup>[8]</sup> Al°(H <sub>2</sub> O)F <sub>6</sub> ]	P2,/c	b=5.508Å	Z=4	AI(4e) F <sub>I-VI</sub> (4e)		SR,32A,164-166;Pov.,664;
				c=16.127Å		O(4e)		Str.Tab.,162;RRW,613.
THOROSTEENS-	(Ca,Th,Mn) <sub>3</sub> Si <sub>4</sub> O <sub>11</sub>		Amorph.					Am.Min.1963,48,433-434
TRUPINE	F.6H <sub>2</sub> O							(Abs.);Pov.,761,370;RRW,616.
TIKHONENKOVI-	SrAIF4(OH).H2O	Sr <sup>19</sup> ,Al <sup>o</sup> [F <sub>4</sub> (OH)(H <sub>2</sub> O)]		a=5.02Å	B=102°43'	Sr(4e) Al(4e)		SR,32A,166-167;Am.Min.,
1			P2 <sub>1</sub> /c	b=10.62Å	Z=4	(H <sub>2</sub> O)(4e)		1964,49,1774-1775(Abs.);
				c=8.73Å		F <sub>I-IV</sub> (4e)		Pov.,658;Str.Tab.,161;RRW,
						(OH)(4e)		61/-618.
TINCALCONITE	Na <sub>2</sub> B <sub>4</sub> O <sub>5</sub> (OH) <sub>4</sub> .	{g}{B <sub>2</sub> B <sub>2</sub> <sup>T</sup> O <sub>5</sub> (OH) <sub>4</sub> ]	Trig.	a=11.09Å		Na <sub>1</sub> (9e) Na <sub>11</sub> (3b)		Am.Min., 1973, 58, 523-530;
	3H2O	(3∞)[Na°2(H2O)3]	R32	c=21.07Å		Na <sub>III</sub> (6c)B <sub>I-II</sub> (18f)		SR,39A,263;Pov.,478-479;
				Z=9		O <sub>I</sub> (9d)		Str.Tab.,258;RRW,619.
TINTICITE	Fe <sub>4</sub> (PO <sub>4</sub> ) <sub>3</sub> (OH) <sub>3</sub> .		Mon.	a=13.65Å	β=91.2°			Am.Min., 1989, 74, 1404 (Abs.);
	5H <sub>2</sub> O		P2	b=6.542Å	Z=3			Pov.,548-549;Str.Tab.,343;
				C=12.31A				KKW, 019, HOIZEI, 160.
TOBERMORITE	Ca <sub>5</sub> Si <sub>6</sub> O <sub>16</sub> (OH) <sub>2</sub> .		orth.	8=11.3A	Z=4			Str. Tab., 424; RRW, 626; Zeit.
	NH20		C2224	D=7.33A				20 442:Dov. 425:Likitol 220
TOTOT		1 (9) (17)	Trice	0-6-0-0 0-0-734 Å				Min Mon 1070 43 232, 238
10000	(Ca, Mill) 14 S124 C58	[Oct.(DH),(H2O),1	- Q	C=18.84Å				Hölzel 236:Pov. 434-435:
		77() 7: 10/: 10/00 1		Z=1				RRW,630.
TSCHERMIGITE	NH4AI(SO4)2.	Al°S <sub>2</sub> 'O <sub>8</sub> (H <sub>2</sub> O) <sub>12</sub>	Cub.	a=12.242Å		AI(4a) S(8c)		Zeit. Krist., 1981, 157, 147-166;
	12H <sub>2</sub> O	{8}[NH₄] <sup>[6]</sup>	Pa3	Z=4		N(8c) O <sub>1</sub> (8c) O <sub>11</sub> (24d)		Hölzel,129;Pov.,597;Str.Tab., 286.
TSUMCORITE	Pb(Zn,Fe) <sub>2</sub> (AsO <sub>4)2</sub> .	Pb <sup>lgi</sup> (Zn,Fe) <sub>2</sub> <sup>o</sup> As <sub>2</sub> <sup>t</sup>	Mon.	a=9.124Å	B=115°17'	Pb(2a)		Acta Cryst., 1973, <u>B29,</u> 2789-
	(OH,H <sub>2</sub> O) <sub>2</sub>	[O <sub>8</sub> (OH,H <sub>2</sub> O) <sub>2</sub> ]	C2/m	b=6.329Å	Z=2	(Zn,Fe)(4f)		2794;SR,39A,299-300;RRW,
		(~Brackebuschite)		c=7.577A		As(4i)		631Min.Abs., 72-1405.

NAME	CHEMICAL	STRUCTURAL	SPACE	UNIT CELL DIMENSIONS	MENSIONS	EQUIVALENT	STRUCTURE TYPE	REFERENCES
	FORMULA	FORMULA	GROUP	8 000 8	1007	(40) Cr(40)		Am Min 1084 40 1540 1588
TUNELLITE	STEGO (OH)2.3H2O	Sr (H <sub>2</sub> O) <sub>3</sub>	Mon.	8=14.390A	β=114.2	DI-VI(4e) 31(4e)		OF 00 00 004 TO 49-10-10-10-10-10-10-10-10-10-10-10-10-10-
		{2∞}{B <sub>3</sub> 'B <sub>3</sub> "O <sub>9</sub> (OH) <sub>2</sub>	P2 <sub>1</sub> /a	D=8.213A	<b>7=4</b>	Oi-xiv(4e)		St. Tah 265. DRW 633
		(=Nobleite)		C-8.854A				OH: 1 8D.; 200; INVV, 000.
TYRETSKITE-1Tc	Ca <sub>2</sub> B <sub>5</sub> O <sub>9</sub> (OH).H <sub>2</sub> O		Б.	a=6.44A	α=61°46			Am.Min., 1968, 53, 2084-2087;
			٦ -	b=6.45Å	β=60°15'			Pov., 488-489; Holzel, 118; Str.
				c=6.41Å	$\gamma = 73^{\circ}30'$			Tab.,264;RRW,635.
UMBITE	K,ZrSi,Oo,H,O		Orth.	a=10.208Å	1			Am.Min., 1984, 69, 813-814;
	7		P2,2,2,	b=13.241Å				Am.Min., 1982, 67, 416-417
				c=7.174Å				(Abs.);Hölzel,205.
UMOHOITE	(UO <sub>2</sub> )M <sub>0</sub> O <sub>4</sub> .4H <sub>2</sub> O	U <sup>[6]</sup> Mo <sup>[6]</sup> [O <sub>6</sub> (H <sub>2</sub> O) <sub>4</sub> ]	Mon.	a=14.30Å	β=88°5'			RRW,639;Pov.,325-326;
	•		P2 <sub>1</sub> /m	b=7.50Å	Z=4			Str. Tab., 302; SR, <u>28, 225-226;</u>
				C-0.30A				A - 16: 4070 57 507/AL- V
VANALITE	NaAl <sub>8</sub> V <sub>10</sub> O <sub>38</sub> .30H <sub>2</sub> O		Mon.	a=12.591A	β=95.30°			Am.Min., 1972, 37, 397 (Abs.);
			F2/m	c=10.923Å	7=7			nolzel, oo.
VANTASSELITE	AL(PO,)2(OH)2.		Orth.	a=10.528Å	Z=8			Am.Min., 1988, 73,931 (Abs.);
	9H <sub>2</sub> O		Pmam	b=16.541Å				Hölzel, 168.
				c=20.373Å				
VASHEGYITE	Al <sub>11</sub> (PO <sub>4</sub> ) <sub>9</sub> (OH) <sub>6</sub> .		Orth.	a=10.754Å	Z=4			Hölzel, 168; Min. Mag., 1974, 39,
	38H <sub>2</sub> O		Pnma ?	b=14.971A				802-806:Encyc.Miner.Nam.,
				-1				010
VESZELYITE	(Cu,Zn) <sub>3</sub> PO <sub>4</sub> (OH) <sub>3</sub> .	(Cu,Zn) <sub>3</sub> P <sup>r</sup>	Mon.		β=103.18°	(Cu,Zn) -  (4e)		Am.Min., 1974, 59, 573-581;
	2H <sub>2</sub> O	[O <sub>4</sub> (OH) <sub>3</sub> (H <sub>2</sub> O) <sub>2</sub> ]	P2 <sub>1</sub> /a	b=10.224A	Z=4	Zn(4e) P(4e)		K/B,91-92;Pov.,549-550;
		(=Kipushite)		c=7.532A		O <sub>I-IV</sub> (4e)		Str. I ab., 346; RRW, 652.
VINOGRADOVITE		3∞[(Na,Ca), <sup>[8]</sup> Ti₄°Si <sub>8</sub> <sup>t</sup>			β=100.13°	Na <sub>i</sub> (8f) Ti(8f)		Zeit.Krist., 1992, 200, 237-245;
	(H <sub>2</sub> O),K <sub>3</sub> )	O <sub>26</sub> (H <sub>2</sub> O,K <sub>3</sub> )]	C2/c	b=8.662Å	Z=2	Si⊦⊪(8f)		Pov.,426-427;Sov.Phys.Cryst., 1984.29.403-406.
VOI BODTUITE	1	Cit of t		a=10 604Å	R=94 810			Am.Min. 1974.59.372-373:
	2H <sub>2</sub> O	[O <sub>7</sub> (OH) <sub>2</sub> (H <sub>2</sub> O) <sub>2</sub> ]	2	b=5.879Å	Z=2			Pov.,498;Hölzel,159.
				c=7.202Å				
VOLKOVSKITE	Ca(B <sub>3</sub> O <sub>4</sub> (OH) <sub>2</sub> )2.		Mon.	a=6.575Å	β=119°5'			Can.Min., 1990, 28, 351-356.
	4,0 H		P2 <sub>1</sub>	b=23.921A	Z=4?			Am.Min., 1966, 51, 1550 (Abs.);
				c=6.522Å				Str.Tab.,261,Pov.,487-488.
VYACHESLAVITE	VYACHESLAVITE UPO4(OH).2.5H2O		Orth.	a=6.96Å	9=Z			Am.Min., 1985, 70,878 (Abs.);
			Cmcm	b=9.10Å				Hölzel,178.
WAIRAKITE	Ca(Al-SiA)O42, 2H2O Cal <sup>15</sup> (H2O)2	Ca <sup>(6)</sup> (H <sub>2</sub> O),	Mon.	a=13.692Å	B=90.5°	Ca(8j)		Am.Min., 1979, 64, 993-1001;
	7 7 7 7 7 7	(30)[Al2 Si4 O12]	l 2/a	b=13.643Å		(AI,Si) <sub>I-VI</sub> (8j)		Pov.,351-352;Str.Tab.,471;
		(«Analcime,Zeolite)		c=13.560Å		O <sub>I-XII</sub> (8j)		RRW, 659-660.

NAME	CHEMICAL FORMULA	STRUCTURAL FORMULA	SPACE	UNIT CELL DIMENSIONS	MENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
WARDSMITHITE	Ca <sub>5</sub> Mg(B <sub>4</sub> O <sub>7</sub> ) <sub>6</sub> . 30H <sub>2</sub> O		Hex.	٠				Am.Min., 1970, 55,349-357; RRW, 662; Pov., 491; Hölzel, 115.
WAVELLITE	Al <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> (OH,F) <sub>3</sub> . 5H <sub>2</sub> O	Al <sub>3</sub> °P <sub>2</sub> ¹ [O <sub>6</sub> (OH,F) <sub>3</sub> (H <sub>2</sub> O) <sub>5</sub> ]	Orth. Pcmn	a=9.621Å b=17.363Å c=6.994Å	Z=4	Ali(4c) Alii(8d) P(8d) Ol-Iv(8d) 		Zeit.Krist.,1968, <u>127,</u> 21-33;SR, <u>33A,</u> 404-405;Pov.,549;Str. Tab.,343;RRW,663.
WENDWILSONITE	Ca <sub>2</sub> (Mg,Co)(AsO <sub>4</sub> ) <sub>2</sub> .2H <sub>2</sub> O	Ca <sup>[7</sup> {1∞}[(Mg,Co)° As₂ <sup>t</sup> O <sub>8</sub> (H₂O)₂] (=Brandtite)	Mon. P2 <sub>1</sub> /c	a=5.806Å b=12.912Å c=5.623Å	β=107°24' Z=2			Am.Min.,1987, <u>72,</u> 217-221; Hölzel,163.
WHITMOREITE	Fe <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>2</sub> . 4H <sub>2</sub> O	Fe <sub>3</sub> °P <sub>2</sub> ¹ [O <sub>8</sub> (OH) <sub>2</sub> (H <sub>2</sub> O) <sub>4</sub> ] <sup>c/h</sup> (Basic str.Arthurite)	Mon. P2 <sub>1</sub> /c	a=10.00Å b=9.73Å c=5.471Å	β=93.8° Z=2	Fe <sub>I</sub> (2a) Fe <sub>II</sub> (4e) P(4e) O <sub>I-IV</sub> (4e) 		Am.Min.,1974 <u>,59</u> ,900-905;K/B, 39-40;SR, <u>40A,</u> 246;K/B,39-40.
WOODWARDITE	(Cu,Al) <sub>8</sub> SO <sub>4</sub> (OH) <sub>16</sub> . nH <sub>2</sub> O		Trig.	٤				Min.Mag.,1976, <u>43</u> ,644-647; RRW,676; Hölzel,134.
WROEWOLFEITE	Cu <sub>4</sub> SO <sub>4</sub> (OH) <sub>6</sub> .2H <sub>2</sub> O Cu <sub>4</sub> °S' [O <sub>4</sub> (OH) <sub>6</sub> (H <sub>2</sub> O) <sub>2</sub> ]	Cu4°S¹ [O4(OH) <sub>6</sub> (H <sub>2</sub> O) <sub>2</sub> ]	Mon. Pc	a=6.045Å b=5.646Å c=14.337Å	β=93.39° Z=2	Cu <sub>-IV</sub> (2a) S(2a) O <sub>I-XII</sub> (2a)		Am.Min.,1985 <u>,70,</u> 1050-1055; Min.Mag.,1975 <u>,40</u> ,1-5; Hölzel,132.
XITIESHANITE	FeSO <sub>4</sub> CI.6H <sub>2</sub> O		Mon. P2₁/a	a=14.102Å β=111.266° b=6.908Å Z=4 c=10.673Å	)=111.266° Z=4			Am.Min.,1984 <u>,69</u> ,1194(Abs.); Hölzel,135.
YAROSLAVITE	Ca <sub>3</sub> Al <sub>2</sub> F <sub>10</sub> (OH) <sub>2</sub> . H <sub>2</sub> O		Orth. ?	a=8.74Å b=5.53Å c=4.51Å	Z=4			Am.Min.,1968 <u>,51</u> ,1546-1547; Hölzel,54;RRW,680;Pov.,658; Str.Tab.,161.
YOFORTIERITE	(Mn,Mg) <sub>5</sub> Si <sub>8</sub> O <sub>20</sub> (OH) <sub>2</sub> .8-9H <sub>2</sub> O	(Mn,Mg) <sub>5</sub> °(H <sub>2</sub> O) <sub>8-9</sub> (OH) <sub>2</sub> {2∞}[Si <sub>8</sub> ¹O <sub>20</sub> ] (≈Palygorskite)	Mon. Pn	ć				Hölzel,236;Encyc.Miner.Nam., 338;Can.Min.,1975 <u>,13</u> ,68-74; LF,241.
ALITE	0	Ca <sup>l<sup>8]</sup>(H<sub>2</sub>O)₄ {3∞}[Si<sub>6</sub><sup>t</sup>Al<sub>2</sub><sup>t</sup>O₁6] (Zeolite)</sup>	Mon. Pc	a=6.700Å b=13.972Å c=10.039Å	β=111.07° Z=2	β=111.07° Ca(2a) Al⊦ıı(2a) Z=2 Si⊦νı(2a) O⊦xνı(2a)		Zeit.Krist.,1986, <u>174,</u> 265-281; Pov.,357;Str.Tab.,492;RRW, 683;SR, <u>34A</u> ,374.
ZAHERITE	Al <sub>12</sub> (SO <sub>4</sub> ) <sub>5</sub> (OH) <sub>26</sub> . 20H <sub>2</sub> O		Tric. P 1?	a=18.475Å or b=19.454Å or c=3.771Å	$\alpha$ =95°14.4° $\beta$ =91°28.8° $\gamma$ =80°14.4° $Z$ =1			Min.Mag.,1985 <u>,49,</u> 145-146; Hölzel,135;Am.Min.,1977, <u>62,</u> 1125-1128;Am.Min.,1986, <u>71,</u> 231-232(Abs.).
ZEMANNITE	(H,Na) <sub>2</sub> (Zn,Fe) <sub>2</sub> (TeO <sub>3</sub> ) <sub>3</sub> .nH <sub>2</sub> O	(H,Na) <sub>2</sub> (H <sub>2</sub> O) <sub>n{3∞}</sub> [(Zn,Fe) <sub>2</sub> <sup>°Te<sub>3</sub><sup>[M)</sup>O<sub>9</sub>] (≈Zeolite)</sup>	Hex. P6 <sub>3</sub> /m	a=9.404Å c=7.636Å Z=2		(Zn,Fe)(4f) Ti(6h) O <sub>i</sub> (6h)		Eur.J.Min.,1995,7,509-523; Pov.,565,Str.Tab.,229;RRW, 685;Hölzel,93.
ZINCROSELITE	Ca <sub>2</sub> Zn(AsO <sub>4)2</sub> . 2H <sub>2</sub> O		Mon. P2 <sub>1</sub> /c	a=5.832Å b=12.889Å c=5.644Å	β=107.72° Z=2			Am.Min.,1988 <u>,73</u> ,932(Abs.); Hölzel,163.

#### $A_pB_qC_rD_sE_x.nAq.$

NAME	CHEMICAL	STRUCTURAL FORMULA	SPACE	UNIT CELL DIMENSIONS	MENSIONS	EQUIVALENT	STRUCTURE TYPE	REFERENCES
ABERNATHYITE	K(UO <sub>2</sub> )AsO <sub>4</sub> .3H <sub>2</sub> O	(H <sub>2</sub> O) <sub>3</sub> K <sup>[6]</sup> {2∞}[U <sup>[2</sup> *4]O <sub>2</sub> As ¹O₄] (≈Metatorbemite)	Tet. P4/ncc	a=7.176Å c=18.126Å	2=4	U(4c) As(4b) O <sub>I-II</sub> (4c) O <sub>III-IV</sub> (16g)		Am.Min., 1964, <u>49</u> , 1578-1602; LF, 246; SR <u>, 29</u> , 377- 378Str. Tab., 353; Pov., 522.
AGARDITE-(La)	(Cu,Ca) <sub>6</sub> La(AsO <sub>4</sub> ) <sub>3</sub> (OH) <sub>6</sub> .3H <sub>2</sub> O		Hex. P6 <sub>3</sub> /m	ć				Encyc.Miner.Nam.,11;Hölzel, 177.
AGARDITE-(Y)	Cu <sub>6</sub> (Y,Ca)(AsO <sub>4</sub> ) <sub>3</sub> (OH) <sub>6</sub> .3H <sub>2</sub> O		Hex. P6 <sub>3</sub> /m	a=13.583Å c=5.895Å	Z=2	Cu(12i)Y(2d) As(6h)O <sub>I-IV</sub> (6h) O <sub>V-VI</sub> (12i)		Acta Cryst.,1985, <u>C41,</u> 161-163; Hölzel,177;RRW,5;Pov.,519.
AHEYLITE	(Fe,Zn)Al <sub>6</sub> (PO <sub>4</sub> ) <sub>4</sub> (OH) <sub>8-</sub> 4H <sub>2</sub> O		Т Ч Э.	a=7.408Å ob=9.891Å ob=9.891Å ob=7.627Å	α=110°56' β=115°3' γ=69°89' Z=1			Hölzel suppl
ALDERMANITE	(Mg,Ca) <sub>5</sub> Al <sub>12</sub> (PO <sub>4</sub> ) <sub>8</sub> (OH) <sub>22</sub> .32H <sub>2</sub> O		Orth. ?	a=15.00Å b=8.330Å c=26.60Å	Z=2			Min.Mag.,1981, <u>44,</u> 59-62;Am. Min.,1981, <u>66,</u> 1099(Abs.); Hölzel,172.
ALIETTITE	Ca <sub>0.2</sub> Mg <sub>6</sub> (Si,Al) <sub>6</sub> O <sub>20</sub> (OH) <sub>4</sub> .4H <sub>2</sub> O		٤					Am.Min., 1972, <u>57</u> , 598 (Abs.); Am.Min., 1982, <u>67</u> , 394-398.
ALUMINOCOPIA- PITE	(Al,Mg)Fe <sub>4</sub> (SO <sub>4)6</sub> (OH,O) <sub>2</sub> .20H <sub>2</sub> O		Tric. P 1	a=7.30Å b=18.80Å c=7.31Å	$\alpha$ =91.5° $\beta$ =102.3° $\gamma$ =98.7° Z=1			Can.Min.,1985, <u>23,</u> 53-56; Hölzel,133;RRW,15;Pov.,601; Str.Tab.,295;Am.Min.,1967, <u>52,</u> 1220-1223.
ALUMINOPHAR- +MACOSIDERITE	KAI4(AsO <sub>4)3</sub> (OH) <sub>4</sub> .6.5H <sub>2</sub> O	Al4°As3 <sup>†</sup> [O <sub>12</sub> (OH)4(H <sub>2</sub> O) <sub>6.5</sub> K]	Cub. P 43m	a=7.745Å	Z=1?			Am.Min.,1981, <u>66</u> ,1099(Abs.); Hölzel,173;Str.Tab.,348;SR, <u>11,</u> 405-407.
AMICITE	K <sub>2</sub> Na <sub>2</sub> (Al <sub>4</sub> Si <sub>4</sub> )O <sub>16</sub> .5H <sub>2</sub> O	K₂ <sup>[//</sup> Na₂ <sup>[σ</sup> (H₂O)₅ {3∞}[Al₄'Si₄'O₁6] (Zeolite)	<b>M</b> on. I 2	a=10.226Å b=10.422Å c=9.884Å	β=88°19' Z=2	Sil-II(4c)All-II(4c) Ol-VIII(4c)Na(4c) K(4c)		Acta Cryst.,1979, <u>B35,</u> 2866- 2869;SR, <u>45,</u> 367;Am.Min., 1980, <u>65,</u> 808(Abs.);Hölzel,244.
AMSTALLITE	CaAl(Si,Al) <sub>4</sub> O <sub>8</sub> (OH) <sub>4</sub> .(H <sub>2</sub> O,Cl)		Mon. C2/c	a=18.830Å b=11.517Å c=5.190Å	β=100.86° Z=4			Am.Min.,1988 <u>,73</u> ,1492(Abs.); Hölzel,224.
ARISTARAINITE	Na <sub>2</sub> Mg (B <sub>6</sub> O <sub>8</sub> (OH) <sub>4</sub> ) <sub>2</sub> .4H <sub>2</sub> O	Na₂ <sup>[59]</sup> Mg°(H₂O)₄ {2∞}[B₃¹B₃ <sup>tr</sup> O <sub>8</sub> (OH)₄]	Mon. P2₁/a	a=18.886Å b=7.521Å c=7.815Å	β=97.72° Z=2	Mg(2a) Na(4e) B <sub>I-VI</sub> (4e) O <sub>I-XIV</sub> (4e)		Am.Min.,1977, <u>62</u> ,979-989;Am. Min.,1974 <u>,59</u> ,847-651;SR, <u>43A,</u> 225-226; Hölzel,118.
ARMENITE	BaCa <sub>2</sub> Al <sub>6</sub> Si <sub>9</sub> O <sub>30</sub> .2H <sub>2</sub> O	3∞[Ca₂°Al <sub>6</sub> tSi₃¹O₃₀ (H₂O)₂Ba¹¹²l (≈Milarite)	(Orth.) Pnna	a=13.874Å b=18.660Å c=10.697Å	Z=4	Ba(4c)Ca(8e) Al(4c) (Si,Al)⊩ı(4d)		Am.Min., 1992, <u>77</u> , 422-430; SR, 4 <u>0A,</u> 286-287; Sov. Phys. Cryst., 1974, <u>19</u> , 480-462; Pov. 380;
ARSENIOSIDERI- TE	Ca <sub>2</sub> Fe <sub>3</sub> O <sub>2</sub> (AsO <sub>4</sub> ) <sub>3</sub> .3H <sub>2</sub> O	Ca₂ <sup>[1/</sup> (H₂O)₃ {2∞}[Fe₃ <sup>°</sup> As₃ <sup>t</sup> O₁₂] (=Mitridatite)	Mon. A2/a	a=17.76Å b=19.53Å c=11.30Å	β=96.0° Z=8			Am.Min., 1974, <u>59</u> , 48-59; RRW, 35-36; Pov., 525; Str. Tab., 345; Hölzel, 175; Encyc. Miner. Nam., 23.

NAME	CHEMICAL FORMULA	STRUCTURAL FORMULA	SPACE	UNIT CELL DIMENSIONS	MENSIONS	EQUIVALENT	STRUCTURE TYPE	REFERENCES
ARTHURITE		Cu°Fe2°As2	Mon.	a=10.189Å	β=92.16°			SR,44A,349;Min.Mag.,1964,
		[O <sub>8</sub> (OH) <sub>2</sub> (H <sub>2</sub> O) <sub>4</sub> ] <sup>ch</sup> (Subs.d.Whitmorite)	P2 <sub>1</sub> /c	b=9.649Å c=5.598Å	Z=2			33,937-941;Pov.,517;Str.Tab., 345; Hölzel,170.
AUBERTITE		Cu <sup>o</sup> Al <sup>o</sup> S <sub>2</sub> <sup>c</sup>	Tric.	a=6.282Å	α=91.85°	Cu(1e)Cl(1g)		Acta Cryst., 1979, <u>B35, 2499</u> -
	14H <sub>2</sub> O	[O <sub>8</sub> (H <sub>2</sub> O) <sub>14</sub> CI]	٦-	b=13.192Å	β=94.70°	AI(1f)S(2i)		2502;Min.Abs.,80-2891;
				c=6.260Å	γ=82.46° 7=1	O <sub>I-XI</sub> (2i)		Hölzel, 133.
AUTUNITE	Ca(UO <sub>2</sub> ) <sub>2</sub> (PO <sub>4</sub> ) <sub>2</sub> .	(H <sub>2</sub> O) <sub>10</sub> [ Ca <sup>[6]</sup>	Tet.	a=6.989Å	Z=2	Ca(2a)P(4d)	(H <sub>2</sub> O) <sub>10</sub> [ Ca <sup>[6]</sup>	LF,245; Wyckoff,1965,vol.3,
	10H <sub>2</sub> O	{2∞}[U <sup>[2+4]</sup> O <sub>2</sub> P <sup>1</sup> O <sub>4]2</sub> ]	I4/mmm	c=20.63Å		U(4e)	{2∞}[U <sup>[2+4</sup> ]O₂P <sup>t</sup> O₄] ] AUTUNITE	869-870; Am. Min., 1961, 46, 812-822; RRW, 43; Pov., 555-556.
BARBERTONITE	Mg <sub>6</sub> Cr <sub>2</sub> CO <sub>3</sub> (OH) <sub>16</sub> .		Hex.	a=6.18Å	Z=1			Pov., 331; Str. Tab., 247; RRW,
	,		P6 <sub>3</sub> /mmc	b=15.55Å				49-50; Hölzel,107.
BASSETITE	Fe(UO <sub>2</sub> ) <sub>2</sub> (PO <sub>4</sub> ) <sub>2</sub> .		Mon.	a=6.98Å	β=90°32′			Enc.Min.Nam.,33;Min.Mag.,
		{2\infty\ \bigg  \big  \	P2 <sub>1</sub> /m	b=17.07A	Z=1			1934, <u>C23</u> ,343-335,P0V,336, Str Tab 351.RRW 54.Hölzel
		(*Metatorbernite)		2				181;LF,246.
BAYLDONITE	(Cu,Zn) <sub>3</sub> Pb(AsO <sub>4</sub> ) <sub>2</sub>	E	Mon.	a=10.147Å	B=106°05'	Cu <sub>1</sub> (4a)Cu <sub>11</sub> (4b)		Acta Cryst., 1979, <u>B35</u> , 819-823;
	(OH) <sub>2</sub> .H <sub>2</sub> O	Pb[8at/] (AS(O <sub>4</sub> ) <sub>2</sub> (OH) <sub>2</sub> ]	C2/c	b=5.892Å	Z=4	Cu <sub>III</sub> (4d)Pb(4e)		Am.Min., 1981, 66, 148-153; SR,
				c=14.081Å		As(8f)		45A,324;Pov.,513;Str.Tab.,325
BAYLEYITE	Mg <sub>2</sub> (UO <sub>2</sub> )(CO <sub>3</sub> ) <sub>3</sub> .	(H <sub>2</sub> O) <sub>18</sub>	Mon.	a=26.560Å	β=92.90°			Min.Abs.,87M/0308;Min.Abs.,
	18H <sub>2</sub> O	{3∞}[Mg2°UO2(CO3)3]	P2 <sub>1</sub> /a	b=15.256Å	Z=4			87M/2144;Str.Tab.,249;RRW,
		(≈Liebijite)		c=6.505A				56;Holzel,109.
BAZHENOVITE	Ca <sub>8</sub> S <sub>5</sub> (S <sub>2</sub> O <sub>3</sub> )(OH) <sub>2</sub> .		Mon.	a=8.45Å	β=119.5°			Am.Min., 1989, 74, 500 (Abs.);
			P2 <sub>1</sub> /c	b=17.47Å c=8.24Å	Z=1			Hölzel,26.
BECQUERELITE	Ca(UO <sub>2</sub> ) <sub>6</sub> O <sub>4</sub> (OH) <sub>6</sub> .	(H <sub>2</sub> O) <sub>8</sub> Ca <sup>[5]</sup>		a=13.8378Å Z=4	, Z=4	U <sub>-VI</sub> (4a)		Am.Min., 1987, 72, 1230-1238;
		{2\infty\{\O_2\}^2\}(\OD_3\)^2	Pn2₁a	b=12.3781A		Ca(4a)		Am.Min., 1984, 69, 214 (Abs.);
		(≈Billietite)		C=14.9238A				57.
BEIDELLITE		(H <sub>2</sub> O) <sub>n</sub> (Na,Ca) <sub>0.3</sub>	Orth.	a=5.17Å	β≈90°′		(H <sub>2</sub> O) <sub>n</sub> (Na,Ca) <sub>0.3</sub>	Pov.,728,445;Str.Tab.,445;LF,
	(Si,Al) <sub>4</sub> O <sub>10</sub> (OH) <sub>2</sub> . nH <sub>2</sub> O	Al <sub>2</sub> °(OH) <sub>2</sub> {2∞}{(Si.Al) <sub>4</sub> O <sub>10</sub> ] <sup>(2.5)c</sup>	C2/m	b=8.94Å c=15.2Å	Z=2		(AI,Mg)2 <sup>°</sup> (OH)2 {2∞} [Si4 <sup>t</sup> O₁0] <sup>(2:s)c</sup>	232;Encyc.Miner.Nam.,34; RRW,59.
							MONTMORILLONITE	
BENTORITE	Ca <sub>6</sub> (Cr,Al) <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub>		Hex.	a=22.35Å	S=2			Am.Min.1981,66,637(Abs.);
			P63/mmc	c=21.41A				Holzel, 136; Encyc. Miner. Nam., 36.
BERAUNITE	Fe <sup>2*</sup> Fe <sub>5</sub> **(PO <sub>4</sub> ) <sub>4</sub>	Fe <sub>6</sub> °P₁¹	Mon.	a=20.760Å	β=93.55°	Fe <sub>1</sub> (4a)Fe <sub>11</sub> (4c)		Can.Min., 1989, 27, 441-446;
		[O₁6(OH)₅(H₂O)6] (≈Strunzite)	C2/c	b=5.154A c=19.248Å	Z=4	Fe <sub>III-IV</sub> (8t) P <sub>I-II</sub> (8f)		Pov., 548-549; Str. 1 ab., 545; Acta Cryst., 1967, 22, 173-181.

Hyb. (H <sub>2</sub> O)Ba (Orth.   Par2, 12 0720Å Z=4   U <sub>LN</sub> (4a)Ba(4a)   Par2,   Par2, 12 0720Å Z=4   O <sub>LN</sub> (4a)Ba(4a)     (2a)Equerelite)	NAME	CHEMICAL	STRUCTURAL	SPACE	UNIT CELL DIMENSIONS	DIMENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
Geograerelite   Geograerelit	BILLIETITE	Ba(UO <sub>2</sub> ) <sub>6</sub> O <sub>4</sub> (OH) <sub>6</sub> . 4H <sub>2</sub> O	(H <sub>2</sub> O)₄Ba {2∞}{(UO <sub>2</sub> )₀O₄(OH) <sub>6</sub> ]	Orth. Pbn2 <sub>1</sub>	a=12.0720/ b=30.167Å	-	U <sub>I-VI</sub> (4a)Ba(4a) O <sub>I-XXVI</sub> (4a)		Am.Min.,1987,72,1230-1238; Pov.,327;Str.Tab.225;RRW,70.
Mg°RG°S1   Mon.   a=10.5984   p=100.13°   Fe(2a)Fen(2c)   Co(OH)(HzOy)1   P2,/n   D=17.8724   Z=4   Mg(4e)Si(4e)   D=17.8724   Z=4   Mg(4e)Si(4e)   D=17.8724   Z=4   Mg(4e)Si(4e)   D=18.1324   Z=1   O <sub>V-III</sub> (4e)   D=18.1324   Z=1   O <sub>V-III</sub> (4e)   D=18.1324   Z=1   O <sub>V-III</sub> (4e)   D=18.1324   D=17.9274   Z=4   D=17.9274			(≈Becquerelite)		c=7.1455Å				
Cocyiotic   Pz,nn   D=17,872	BOTRYOGEN	MgFe(SO <sub>4</sub> ) <sub>2</sub> (OH).	Mg°Fe°S <sub>2</sub> t	Mon.	a=10.526Å	_	Fe <sub>1</sub> (2a)Fe <sub>11</sub> (2c)		Acta Cryst., 1958, <u>B24</u> , 700-767;
(ch-0)(2 <sup>co</sup> ) Hex. a=5.47Å Z=1  (ch-0)(2 <sup>co</sup> )(Hex. a=10.992Å α=93°57 Ca <sub>1·v</sub> (21)Si <sub>1·l</sub> (21)  (ch-0)(2 <sup>co</sup> )(Ga <sup>2</sup> )(Si <sup>2</sup> )(O <sub>2</sub> ) Tric. a=10.992Å α=93°57 Ca <sub>1·v</sub> (21)Si <sub>1·l</sub> (21)  (ch-0)(1) Hex. a=15.750Å Z=2  (ch-0)(1) Hex. a=15.750Å Z=2  (ch-0)(1) Cu <sub>1</sub> (12)  (ch-0)(1) Hex. a=15.750Å Z=2  (ch-0)(12)  (ch-0)(			[O <sub>8</sub> (OH)(H <sub>2</sub> O) <sub>7</sub> ] (≈Copiapite)		b=17.872A   c=7.136Å		Mg(4e)Sı-ıı(4e) Oı-vılı(4e)		SR,32A,338;SR,33A,379-381; Pov.,601;Str.Tab.,295.
(2∞)[Mg,°F e²(OH) <sub>13</sub> ] P3	BRUGNATELLITE	MgeFeCO <sub>3</sub> (OH) <sub>13</sub> .	(H <sub>2</sub> O) <sub>4</sub> C <sup>1</sup> O <sub>3</sub>	1	a=5.47Å	Z=1			RRW.92:Pov.331:Str.Tab247:
(OH)O (2α) (Ca) (Ca) (Ca) (Ca) (Ca) (Ca) (Ca) (Ca			{2∞}[Mg <sub>6</sub> °Fe°(OH) <sub>13</sub> ]		c=15.97Å				Hölzel, 107; Am. Min., 1941, <u>26,</u> 295-315.
(«Connelite) P 1 b=8.185A β=91°19' O <sub>LVII</sub> ((2))  («Connelite) c=5.671A γ=89°51'  E=6.016h)Cu <sub>III</sub> ((3))  Peymmc c=9.161A c=85°31'  C=9.161A c=85°31'  C=1.160A γ=100°37'  C=1.160A β=103°33'  C=1.160A β=103°37'  C=2.0 b=11.80A Z=1 Cu(8)Mg(8)  C=2.0 b=11.80A Z=1 C(4e)O <sub>L</sub> (8)  C=2.2 b=2.4A C(4e)O <sub>L</sub> (8)  C=2.2 b=0.088A Z=1 C(4e)O <sub>L</sub> (8)  C=1.2.98A Z=1 C(4e)O <sub>L</sub> (10)  C=1.2.5A A=10.3° Cu <sub>LVI</sub> (4c)Mn(4c)  C=1.2.5A A=10.3° Cu <sub>LVI</sub> (4c)Mn(4c)  C=1.2.5A A=10.3° Cu <sub>LVI</sub> (4c)U(4e)  C=1.2.5A A=10.47A β=103°50' V(4e)O <sub>LVI</sub> (4e)  C=6.59A B=11.53°  Mon. a=10.47A β=103°50' V(4e)O <sub>LVI</sub> (4e)  C=6.59A B=11.53°  Mon. a=7.683A B=11.53°  C=8.24A CARNOTITE  C=6.59A Z=1 Cu(6)O <sub>LVII</sub> (10)  C=6.59A Z=10.478 A=15.93°  C=11.53°  C=11	BULFONTEINITE	Ca <sub>2</sub> SiO <sub>3</sub> (OH)F.H <sub>2</sub> O	1	1	a=10.992Å	α=93°57'	Cal-Iv(2i)Sij-II(2i)		Acta Cryst., 1963, 16,551-558;
(≈Connelite)  (			(OH)F]		b=8.185Å	β=91°19′	O <sub>I-VII</sub> (2i)		RRW,94;Pov.,422;Str.Tab.,379
Hex.   Hex.   a=15.750Å Z=2   Cu <sub>1</sub> (6g)Cu <sub>11</sub> (12i)   Cu <sub>1</sub> (72i)   Cu <sub>2</sub> (72i)   C			(≈Connelite)		c=5.671Å	γ=89°51' Z=4			;SR, <u>28</u> ,256-257.
2. Tric. a=7.35Å α=85°31' Cuv(2a)  Tric. a=7.35Å α=85°31' Cuv(2a)  P 1 b=18.21Å β=103°33' Cuv(2a)  C=7.10Å γ=100°37' Z=1  C2/c b=11.80Å Z=4 C(4e)O <sub>1</sub> (8f)  C2/c b=11.80Å Z=170°18' Cu(8f)Mg(8f)  C2/c c=8.24Å C(4e)O <sub>1</sub> (8f)  [O <sub>4</sub> (OH) <sub>2</sub> (H <sub>2</sub> O) <sub>3</sub> ] [4 <sub>4</sub> /amd c=12.986Å Z=17  [O <sub>4</sub> (OH) <sub>2</sub> (H <sub>2</sub> O) <sub>3</sub> ] [4 <sub>4</sub> /amd c=12.986Å Z=4 O <sub>1.3Vini</sub> (4c)  [C3/c Cu <sub>4</sub> <sup>0</sup> Mn°S <sub>2</sub> ' Mon. a=21.707Å β=103°50' K(4e)U(4e) (C <sup>2</sup> c <sup>2</sup> O <sub>2</sub> ) <sub>2</sub> (V <sub>2</sub> <sup>2</sup> O <sub>3</sub> )] (C <sup>2</sup> c <sup>2</sup> O <sub>2</sub> ) (C <sup>2</sup> c <sup>2</sup> O <sub>2</sub> O <sub>2</sub> ) (C <sup>2</sup> c <sup>2</sup> O <sub>2</sub> O <sub>2</sub> ) (C <sup>2</sup> c <sup>2</sup> O <sub>2</sub> O <sub>2</sub> O <sub>2</sub> ) (C <sup>2</sup> c <sup>2</sup> O <sub>2</sub>	BUTTGENBACHI-			Hex.	a=15.750Å	Z=2	Cu <sub>1</sub> (6g)Cu <sub>11</sub> (12i)		Min.Mag.,1973,39,264-270;
2. Tric. a=7.35Å α=85°31'	j -			2	2		Cu <sub>V</sub> (12j) Cu <sub>V</sub> (2a)		RW,96.
P 1 b=18.21Å β=103°33' C=7.10Å γ=100°37' Z=1  Mon. a=10.06Å β=107°18' Cu(8f)Mg(8f) C2/C b=11.80Å Z=4 C(4e)(H-O)(8f) C=8.24Å C=8.24Å C(4e)(H-O)(8f) C=8.24Å C=12.988Å C=13.988Å	CALCIOCOPIAPI-			Tric.	a=7.35Å	α=85°31'			Hölzel, suppl; Pov., 601; Str. Tab.,
C=7.10Å γ=100°37'  Mon. a=10.06Å β=107°18' Cu(8f)Mg(8f) C2/C b=11.80Å Z=4 Cu(4e)(H <sub>2</sub> O)(8f) C=8.24Å C=8.24Å C(4e)(H <sub>2</sub> O)(8f) C=8.24Å C=12.988Å C=10.47Å β=100.3° Cul <sub>1.07</sub> (4c)Mn(4c) C=11.245Å C=11	<u> </u>			<u>С</u>	b=18.21Å	β=103°33′			295;Can.Min.,1985, <u>23</u> ,53-56;
Mon.					c=7.10Å	γ=100°37' Z=1			Am.Min.,1962,47,807-808; RRW,100
C2/c b=11.80Å Z=4 O <sub>II</sub> (4e)(H <sub>2</sub> O)(8f) c=8.24Å (C4e)O <sub>1</sub> (8f) (C4e)O <sub>1</sub>	CALLAGHANITE	Cu <sub>2</sub> Ma <sub>2</sub> CO <sub>2</sub> (OH) <sub>6</sub> .		Mon.	a=10 06Å	R=107018'	Cu(8f)Ma(8f)		Acta Cryst 1958 11 169-174
Mg <sup>0</sup> Mg <sub>4</sub> °S¹   Tet.   a=5.239Å   Z=1?   (OH) <sub>J-III</sub> (8f)   (OH) <sub>J-III</sub> (8f)   (OH) <sub>J-III</sub> (8f)   (A-I) <sup>2</sup> (A-		2H <sub>2</sub> O		C2/c	b=11.80Å	Z=4	O.(4e)(H <sub>2</sub> O)(8f)		RRW 103 Pov. 620-621 Str
. Mg°Mg,°S' Tet. a=5.239Å Z=1? [O₄(OH)₂(H₂O),] I4,/amd c=12.988Å [O₄(OH)₂(H₂O),] I4,/amd c=12.988Å [o₂(OH)₂(H₂O),] G2 b=6.098Å Z=4 SI·II(4c) («Devilline) Orth.? ? C=11.245Å OI·vv(4c)Mn(4c)  K <sub>2</sub> [I1](H₂O)₃ {2∞} Mon. a=10.47Å β=103°50' K(4e)U(4e) K <sub>2</sub> [I1](H₂O)₃ {2∞} [(U[2²·5]O₂)₂(V₂ [5]O₃)]  K <sub>2</sub> [I1](H₂O)₃ {2∞} Mon. a=10.47Å β=103°50' K(4e)U(4e) [(U[2²·5]O₂)₂(V₂ [5]O₃)]  Mon. a=7.693Å β=115.93° CARNOTITE C=6.59Å Z=1  A2/m b=7.63Å Z=1					c=8.24Å		C(4e)O <sub>1</sub> (8f) (OH) <sub>1111</sub> (8f)		Tab.,247;SR,22,390-392.
Cu_0(OH) <sub>2</sub> (H <sub>2</sub> O) <sub>3</sub>   14 <sub>1</sub> /amd   c=12.988Å     16 <sub>1</sub> (OH) <sub>2</sub> (H <sub>2</sub> O) <sub>3</sub>     16 <sub>1</sub> /amd   c=12.988Å	CAMINITE	MgSO <sub>4</sub> .xMg(OH) <sub>2</sub> .	Mg <sup>°</sup> Mg <sub>x</sub> °S <sup>f</sup>	Tet.	a=5.239Å	Z=1?			Am.Min. 1986.71.819-825:
Cu <sup>2</sup> Cu <sup>2</sup> Mn			[O4(OH)2(H2O)y]	I4 <sub>1</sub> /amd	c=12.988Å				Hölzel, 132.
Cocomplete   Coc	CAMPIGLIAITE	Cu4Mn(SO4)2(OH)6.	Su T	Mon.	a=21.707Å	30.3	Cul-IV(4c)Mn(4c)		Am.Min.,1982,67,385-393;
Orth.?   ?	:	4H <sub>2</sub> O	<u> </u>	22	b=6.098Å c=11.245Å		S <sub>I-II</sub> (4c) O <sub>I-XVIII</sub> (4c)		Hölzel,132.
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	CARBONATE-	Cu <sub>4</sub> Al <sub>2</sub> CO <sub>3</sub> (OH) <sub>12</sub> . 2H <sub>2</sub> O		Orth.? ?	خ				Am.Min., 1964, 49, 441-442 (Abs.): RRW, 107-Pov. 332-
K <sub>2</sub> <sup>[11]</sup> (H <sub>2</sub> O) <sub>3</sub> {2∞}   Mon.   a=10.47Å   β=103°50'   K(4e)U(4e)   K <sub>2</sub> <sup>[11]</sup> (H <sub>2</sub> O) <sub>3</sub> {2∞}   K <sub>2</sub> <sup>[11]</sup> (H <sub>2</sub> O) <sub>3</sub> {2∞}   [(U <sup>[2+3]</sup> O <sub>2)2</sub> (V <sub>2</sub> <sup>[3]</sup> O <sub>3)]   2−2   (V(4e)O<sub>1-M</sub>(4e)   [(U<sup>[2+3]</sup>O<sub>2)2</sub>(V<sub>2</sub><sup>[3]</sup>O<sub>3)]   CARNOTITE   Mon.   a=7.693Å   β=115.93°   A2/m   c=9.785Å   Z=1   C=9.795Å   Z=1   C=9</sub></sub>									Str.Tab.,295; Hölzel, 134.
[(U <sup></sup> C <sub>2)2</sub> (V <sub>2</sub> <sup></sup> C <sub>9)</sub> ] P2-/8 b=8.41A Z=2 V(4e)·U <sub></sub> vi(4e) [(U <sup></sup> C <sub>2)2</sub> (V <sub>2</sub> <sup></sup> C <sub>9</sub> )] CARNOTITE CARNOTITE A2/m b=7.693Å β=115.93° CARNOTITE CARNOTITE CARNOTITE CARNOTITE CARNOTITE CARNOTITE CARNOTITE CARNOTITE CARNOTITE CASUMA (A = 7.693Å Z = 1.795Å	CARNOTITE	K <sub>2</sub> (UO <sub>2</sub> ) <sub>2</sub> (VO <sub>4</sub> ) <sub>2</sub> .	K <sub>2</sub> [11](H <sub>2</sub> O) <sub>3</sub> {2∞}	Mon.	a=10.47Å		K(4e)U(4e)	K <sub>2</sub> [11](H <sub>2</sub> O) <sub>3</sub> {2∞}	Am.Min.,1965,50,825-842;SR,
Mon. a=7.693Å β=115.93° A2/m b=5.763Å Z=1 c=9.795Å		3 <del>1</del> 20	[(UO <sub>2</sub> ) <sub>2</sub> (V <sub>2</sub> -O <sub>8</sub> )]	F2 <sub>1</sub> /a	D=8.41A c=6.59Å	7=7	V(4e)O <sub> -V </sub> (4e)	[(U <sup>r3</sup> O <sub>2</sub> ) <sub>2</sub> (V <sub>2</sub> <sup>13</sup> O <sub>8</sub> )] CARNOTITE	30A,348349;LF,247;RRW, 109;Pov.,503,167;Str.Tab.,356
AZ/m D=5./63A Z=1 C=9.795A	CASSEDANNEITE	Pb <sub>5</sub> (VO <sub>4</sub> ) <sub>2</sub> (CrO <sub>4</sub> ) <sub>2</sub> .		Mon.	a=7.693Å	$\beta = 115.93^{\circ}$			Am.Min.,1988,73,1493(Abs.);
		O E		AZ/m	D=5.763A c=9.795Å	Z=1			Hölzel, 139.

NAME	CHEMICAL	STRUCTURAL FORMULA	SPACE	UNIT CELL DIMENSIONS	MENSIONS	FQUIVALENT	STRUCTURE TYPE	REFERENCES
CAVANSITE	Ca(VO)Si₄O₁₀.	(H <sub>2</sub> O)₄{3∞}[Ca <sup>[7]</sup> V <sup>[5y]</sup>	0	a=9.792Å	Z=4	Ca(4c)V(4c)		Am.Min., 1973, 58, 412-424;
	4H <sub>2</sub> O	Si, 011]	Pcmn	b=13.644Å		Si-1(8d)O-v(8d)		Pov., 437; Str. Tab., 468; RRW,
				c=9.629A		Ovi(4c)		112-113;SR, <u>41A</u> ,379;Hölzel,   236.
CERULÉITE	Cu <sub>2</sub> Al <sub>7</sub> (AsO <sub>4</sub> ),		Tric.	a=14.359Å	∞=96.06°			Am.Min., 1977, 62, 558-559
	(OH) <sub>13</sub> .12H <sub>2</sub> O		P 1?	b=14.687Å	β=93.19°			(Abs.);Pov.,517;Hölzel,172.
				c=7.440Å	γ=91.63° Z=2			
CHAIDAMUITE	ZnFe(SO <sub>4</sub> ) <sub>2</sub> (OH).		Mon.	a=9.759Å	β=106.2°			Am.Min., 1988, 73, 1493 (Abs.);
	4H <sub>2</sub> O		P2 <sub>1</sub> /m	b=7.134A c=7.335Å	Z=2			Hölzel,133.
CHALCOALUMI-	CuAl4SO4(OH) <sub>12</sub> .		Mon.	a=17.090Å	α=95°53'			RRW,117;Hölzel,133;Str.Tab.,
<b>1</b> E	3H <sub>2</sub> O		P2 <sub>1</sub>	b=8.915Å	Z=4			294.
CHALCOSIDERI-	CuFe <sub>6</sub> (PO <sub>4</sub> ) <sub>4</sub> (OH) <sub>8</sub> .		Tric.	a=7.68Å	α=67.5°			Am.Min., 1965, <u>50</u> , 227-231;
2	4H <sub>2</sub> O		٦-	b=7.90Å	β=69.0°			Hölzel, 172; RRW, 120; Pov., 732;
	-			c=10.20Å	γ=64.7° Z=1			Str.Tab.,345.
CHAROITE	(K,Na) <sub>5</sub> (Ca,Ba,Sr) <sub>8</sub>		Mon.	a=10.7Å	β=113°			Am.Min., 1988, <u>73</u> , 198(Abs.);
	Si <sub>18</sub> O <sub>46</sub> (OH,F)		<i>ر</i> .	b=32.0Å	Z=4			Am.Min., 1978, <u>63</u> , 1282(Abs.);
	nH <sub>2</sub> O			c=7.25A				H0lzel,221.
CHELKARITE	CaMgB <sub>2</sub> O₄Cl <sub>2</sub> .		Orth.	a=13.69Å	Z=2			Am.Min., 1971, 56, 1122(Abs.);
	7H <sub>2</sub> O?		Pbca	b=20.84Å c=8.26Å				Hölzel,117.
CHENEVIXITE	Cu <sub>2</sub> Fe <sub>2</sub> (AsO <sub>4</sub> ) <sub>2</sub>		Mon.	a=15.006Å	β=102°15'			Min.Mag., 1977, 41, 27-32; Pov.,
	(OH)4.H <sub>2</sub> O		P2 <sub>1</sub> /m	b=5.189A c=5.724Å	Z=2			/32,516;Str.Iab.,345;RKW, 122; Hölzel,172.
CHILDRENITE	04	(Fe,Mn)°Al°P¹	Orth.	a=10.395Å	Z=8			Min.Abs.,85M/0189;Pov.,534;
	(OH) <sub>2</sub> .H <sub>2</sub> O	[O <sub>4</sub> (OH) <sub>2</sub> (H <sub>2</sub> O)]	Bba2	b=13.394Å c=6.918Å				Str.Tab.,344;RRW,124; Hölzel,
CHRYSOCOLLA	Γ	,	Orth.	a=5.7Å	Z=2			Am.Min., 1969, 54, 993 (Abs.);
	(OH) <sub>4</sub> .nH <sub>2</sub> O		Cm2	b=8.85Å c=6.7Å				Hölzel,235;Pov.,732.
CLAIRITE	(NH <sub>4</sub> ) <sub>2</sub> (Fe,Mn) <sub>3</sub>		Tric.	a=9.368Å	α=88.15°			Am.Min.,1986,71,229(Abs.);
	(SO <sub>4</sub> ) <sub>4</sub> (OH) <sub>3</sub> .3H <sub>2</sub> O		P 1?	b=9.150A	β=90°			H0izei,136.
				c=52.610A	γ=118.36° Z=8			
CLINOTYROLITE	Ca <sub>2</sub> Cu <sub>9</sub>		Mon.	a=10.513Å	β=94°0′			Min.Abs.,80-4909;Hölzel,174.
	(AsO <sub>4</sub> ,SO <sub>4</sub> ) <sub>4</sub> (OH,O) <sub>10</sub> .10H <sub>2</sub> O		Ра	b=5.56A c=27.61Å	Z=2			

NAME		STRUCTURAL	SPACE	UNIT CELL (	UNIT CELL DIMENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
COALINGITE	OH) <sub>24.</sub>	Mg₁₀°Fe₂°C" [O₃(OH)₂₄(H₂O)₂] (≈Brucite)	Trig. R 3m	a=3.12Å c=37.4Å	Z=0.5	(Mg,Fe)(6c) O <sub>I</sub> (6c)O <sub>II</sub> (6c)		Min.Mag.,1971, <u>38</u> ,286-294; Hölzel,107.
COERULEOLAC- TITE	(Ca,Cu)Al <sub>6</sub> (PO <sub>4</sub> ) <sub>4</sub> (OH) <sub>8-</sub> 4-5H <sub>2</sub> O		Tric.	c.				Am.Min.,1958, <u>43,</u> 1224(Abs.); Hölzel,172;RRW,140;Str.Tab., 390.
COMBLAINITE	Ni <sub>6</sub> Co <sub>2</sub> CO <sub>3</sub> (OH) <sub>16</sub> .4H <sub>2</sub> O		Trig. R 3m	a=3.038Å c=22.79Å Z=3	a <sub>R</sub> =7.796 Å α=22.47° Z <sub>R</sub> =1			Am.Min.,1980, <u>65,</u> 1065-1066 (Abs.); Hölzel,107.
CONNELITE	Cu <sub>19</sub> Cl <sub>4</sub> SO <sub>4</sub> (OH) <sub>32</sub> .3H <sub>2</sub> O		Нех. Р <u>6</u> 2с	a=15.78Å c=9.10Å	Z=2	Cu <sub>I-II</sub> (6g) Cu <sub>IV-V</sub> (6h) Cu <sub>VI</sub> (2a)Cl <sub>I-II</sub> (6h)		Am.Min.,1972, <u>57,</u> 426-438; Min.Mag.,1950, <u>29,</u> 280-286; Pov.,650;Str.Tab.,165; RRW,144.
CREASEVITE	Cu <sub>2</sub> Pb <sub>2</sub> (Fe,Al) <sub>2</sub> Si <sub>5</sub> S <sub>17</sub> .6H <sub>2</sub> O		Orth. Cmmm?	a=12.483Å b=21.395Å c=7.283Å	Z=4			Min.Mag.,1975, <u>40</u> ,227-231; Am.Min.,1976, <u>61,</u> 503(Abs.); Hölzel,247;Encyc.Miner.Nam., 73.
CUALSTIBITE	Cu <sub>6</sub> Al <sub>3</sub> (SbO <sub>4</sub> ) <sub>3</sub> (OH) <sub>12</sub> .10H <sub>2</sub> O		Hex. P3	a=9.20Å c=9.73Å	Z=1			Am.Min.,1985, <u>70</u> ,1329(Abs.); Hölzel,79.
CUPROCOPIAPI- TE	CuFe <sub>4</sub> (SO <sub>4)6</sub> (OH) <sub>2</sub> . .20H <sub>2</sub> O	(H <sub>2</sub> O) <sub>6</sub> {1∞}{Cu <sup>2</sup> Fe <sub>3</sub> Se <sup>2</sup> O <sub>24</sub> (OH) <sub>2</sub> (H <sub>2</sub> O) <sub>8</sub> ] {g}{Fe <sup>2</sup> (H <sub>2</sub> O) <sub>6</sub> ] (Subs.d.Copiapite)	는 다 다	a=7.31Å b=18.15Å c=7.25Å	$\alpha = 92.5^{\circ}$ $\beta = 102.3^{\circ}$ $\gamma = 100.4^{\circ}$ Z = 1			Can.Min.,1985, <u>23</u> ,53-56;RRW, 156-157;Hölzel,133;Str.Tab., 295;Pov.,601.
CURIÉNITE	Pb(UO <sub>2</sub> )(VO <sub>4</sub> ) <sub>2</sub> .5H <sub>2</sub> O	$Pb^{[8]}(H_2O)_5\{2\infty\}$ [( $UO_2$ ) $V_2O_8$ ] (=Francevillite)	Orth. Pcan	a=10.40Å b=8.45Å c=16.34Å	Z=4	U(8d)V(8d) Pb(4c) O⊦v⊦(8d)		Bull.Min.,1971, <u>94</u> ,8-14;SR, <u>37A,</u> 239;Pov.,503;Str.Tab., 357;RRW,158.
CURITE	Pb <sub>6.5</sub> (UO <sub>2</sub> ) <sub>16</sub> O <sub>16</sub> (OH) <sub>12.</sub> (H <sub>2</sub> O,OH) <sub>4</sub>		Orth. Pnam	a=12.58Å b=13.01Å c=8.40Å	Z=1	U-II(4c)UIII(8d) Pb <sub>I-II</sub> (4c)		SR, <u>20,</u> 150-151;RRW,158-159; Hölzel,89;Str.Tab.,226;Pov., 327;Encyc.Miner.Nam.,76.
CYANOPHYLLITE	Cu <sub>5</sub> Al <sub>2</sub> (SbO <sub>4</sub> ) <sub>3</sub> (OH) <sub>2</sub> .12H <sub>2</sub> O		Orth. Pmmb	a=11.82Å b=10.80Å c=9.64Å	Z=2			Am.Min.,1981, <u>66</u> ,1274(Abs.); Hölzel,79.
CYANOTRICHITE	Cu <sub>4</sub> Al <sub>2</sub> SO <sub>4</sub> (OH) <sub>12</sub> .2H <sub>2</sub> O		Orth.	a=10.16Å b=12.61Å c=2.90Å	Z=1			JCPDS,11-13;Hölzel,134;Min. Mag.,1961, <u>32</u> ,737- 738;RRW,160.
CYRILOVITE	₹		Tet. P4 <sub>121</sub> 2	a=7.313Å b=19.315Å	Z=4			Str.Tab.,347;Pov.,551;RRW, 160;Min.Abs.,88M/1837.
DARAPSKITE	O <sub>4</sub> )(NO <sub>3</sub> )	Na2°Na <sup>171</sup> (H2O) {g}{S*O <sub>4</sub> }{g}{N <sup>4*</sup> O <sub>3</sub> ]	Mon. P2 <sub>1</sub> /m	a=10.564Å b=6.911Å c=5.194Å	1	β=102.78° Na <sub>1</sub> (4f)Na <sub>11</sub> (2e) Z=2 S(2e)N(2e) O <sub>1</sub> (4f)O <sub>11-V11</sub> (2e)		SR, <u>32A,</u> 332-333;Am.Min., 1970, <u>55,</u> 1510-1517;Str.Tab., 234;Pov.,634;RRW,164.

## A<sub>p</sub>B<sub>q</sub>C<sub>r</sub>D<sub>s</sub>E<sub>x</sub>.nAq. (cont.)

NAME	CHEMICAL	STRUCTURAL	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
DELRIOITE	SrCaV,O <sub>6</sub> (OH),		Mon	a=17.170Å	B=102°29'			Am.Min.:1970.55.185-200:Am.
	.3H <sub>2</sub> O		12/a	b=7.081Å	Z=8=Z			Min., 1959, 44, 261-264; Pov.,
				c=14.644Å				499-500;Str.Tab.,340;RRW,
DESAUTELSITE	Mg <sub>6</sub> Mn <sub>2</sub> CO <sub>3</sub> (OH) <sub>16</sub> .		Trig.	a=3.114Å	Z=3/8			Am.Min., 1979, 64, 127-130;
	.4H2O		R3m	c=23.39A				Hölzel,107.
DESPUJOLSITE	Ca <sub>3</sub> Mn(SO <sub>4</sub> ) <sub>2</sub> (OH) <sub>6</sub> .	(H <sub>2</sub> Q) <sub>3</sub> {3∞}[Ca <sup>[10]</sup>	Hex.	a=8.56Å	Z=2	Ca(6h) Mn(2a)		Bull.Min.,1968, <u>91</u> ,43-50;SR,
	ο. Το. Το.	Mn°52°08(OH)6] (=Schaurteite)	P 62c	C=10./6A		S(41) O <sub>1</sub> (41)		Tab., 296-297; RRW, 170.
DEVILLINE	CaCu <sub>4</sub> (SO <sub>4</sub> ) <sub>2</sub> (OH) <sub>6</sub> .		Mon.	a=20.870Å	β=102°44'			Acta Cryst.,1972, <u>B28</u> ,1182-
	.3H2O		P2,/c	b=6.135Å	Z=8			1189;Am.Min.,1969, <u>54</u> ,328-
				c=22.191Å				329(Abs);SR, <u>38A</u> ,339-340; Pov605.
DRESSERITE	Ba <sub>2</sub> AI <sub>4</sub> (CO <sub>3</sub> ) <sub>4</sub> (OH) <sub>8</sub> .	(H <sub>2</sub> O) <sub>3</sub> {3∞}[Ba <sub>2</sub> Al <sub>4</sub>	Orth.	a=9.27Å	Z=2			RRW,179;Pov.,621;Hölzel,108.
	.3H <sub>2</sub> O		Ppmm	D=16.83A c=5.63Å				
DUFRENITE	Ca <sub>0.5</sub> Fe <sub>6</sub> (PO <sub>4</sub> ) <sub>4</sub>	3∞[Ca <sub>0.5</sub> °Fe <sub>6</sub> °P₄¹O₁6	Mon.	a=25.84Å	β=111.20	Ca(4e)Fe(4a)		Am.Min., 1970, <u>55</u> , 135-169; SR,
	(OH) <sub>6</sub> .2H <sub>2</sub> O	(OH) <sub>6</sub> (H <sub>2</sub> O) <sub>2</sub> ]	C2/c	b=5.126Å	Z=4	O <sub>1-XII</sub> (8f)Fe <sub>II</sub> (4c)		35A,337-339;RRW,180;Pov.,
				c=13.78Å		Fe <sub>III-IV</sub> (8f)P <sub>I-II</sub> (8f)		543; Str.Tab.,319.
DUNDASITE	PbAl <sub>2</sub> (CO <sub>3</sub> ) <sub>2</sub> (OH) <sub>4</sub>	(H <sub>2</sub> O){3∞}[Pb <sup>[9]</sup> Al <sub>2</sub> °	Orth.	a=9.08Å	Z=4	Pb(4c)Al(8d)		Min.Mag., 1972, 38, 564-569;
	O. H:	(OH)4{g}[C"O <sub>3</sub> ]2]	Pbnm	b=16.37A		C <sub>1-11</sub> (4c)O <sub>1-V1</sub> (4c)		Hölzel, 170; SR, 38A, 300; Pov., 621: Str Tab, 248: DBM 181
	- 1	0		A20.0-2		(SO)   \rangle		021,011.18D.,240,RNV,101.
EARLSHANNONI-	PO4)2	(Mn,Fe) Fe <sub>2</sub> P <sub>2</sub>		a=9.910Å	β=93.95°			Can.Min., 1984, 22, 471-474;
=		[O <sub>6</sub> (OH) <sub>2</sub> (H <sub>2</sub> O) <sub>4</sub> ] <sup>27</sup> (Subs.d.Whitmoreite)	P2 <sub>1</sub> /c	b=9.669Å c=5.455Å	Z=2			Hölzel,170.
EGGLETONITE	Na <sub>2</sub> Mn <sub>8</sub> (Si,Al) <sub>12</sub> O <sub>29</sub>		Į.	a=5.554Å	β=93.95°			Min.Mag.,1984,48,93-96;
	(OH)7.11H <sub>2</sub> O		B/Z/	c=25.00Å	Z=2			H0izel,230.
EMBREYITE	Pb <sub>5</sub> (CrO <sub>4</sub> ) <sub>2</sub> (PO <sub>4</sub> ) <sub>2</sub>		Mon.	a=9.755Å	β=103°5′			Min.Mag.,1972,38,790-793;
	.H <sub>2</sub> O		P2 <sub>1</sub> m	b=5.636Å	Z=1			RRW, 189; Hölzel, 139; K/B, 179.
EOSPHORITE	(Mn,Fe)AIPO4	(Mn,Fe)°Al°P <sup>t</sup>	Orth.	a=10.52Å	Z=8	(Mn,Fe)(8d)		Acta Cryst.,1960,13,384-387;
	(OH) <sub>2</sub> .H <sub>2</sub> O	[O <sub>4</sub> (OH) <sub>2</sub> (H <sub>2</sub> O)]	Bbam	b=13.60Å		P(8f)Al(8c)		RRW,191-192;Pov.,534;Str.
		(=Childrenite)		c=6.97Å		O <sub>1</sub> (8d)O <sub>11-111</sub> (8f) O <sub>1/2-7</sub> (16g)		Tab.,344;K/B,125-126.
EPISTILBITE	NaCa <sub>3</sub> (Al <sub>6</sub> Si <sub>18</sub> )O <sub>48</sub>	Na <sup>[9]</sup> Ca <sub>3</sub> <sup>[9]</sup> (H <sub>2</sub> O) <sub>16</sub>	Mon.		B=124.54°	(Ca,Na)(4i)		SR,32A,488-489;Zeit.Krist.,
	.16H <sub>2</sub> O	(3∞)[Al <sub>6</sub> Si₁8 <sup>t</sup> O <sub>48</sub> ]	C2/m	b=17.74Å	Z=1	(AI,Si) -   (8j)		1985, <u>173</u> ,257-265;Pov.,353-
		(Zeolite)		c=10.25Å		O <sub>I</sub> (4i)		354;Eur.J.Min.,1996, <u>8</u> ,263-
						O <sub>  -   </sub> (4g)		2/1;RKW,193;Str. I ab.,490.

NAME		STRUCTURAL FORMULA	SPACE GROUP	UNIT CELL D	UNIT CELL DIMENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
ETTRINGITE		Ca <sub>6</sub> <sup>I9</sup> /Al <sub>2</sub> °S₃¹ [O₁₂(OH)₁₂(H₂O)₂a] (≈Thaumasite)	Trig. P31c	a=11.26Å c=21.48Å	Z=2	Al <sub>I-II</sub> (2a)Ca <sub>I-II</sub> (6c) S <sub>I-III</sub> (2b) O <sub>I-XVI</sub> (6c) O <sub>XVII-XIX</sub> (2b)		Acta Cryst.,1970, <u>B26</u> ,386- 393;Am.Min.,1960, <u>45,</u> 1137- 1143;Pov.,600-601;Str.Tab., 297;SR, <u>35A,</u> 378-379.
EZTLITE	Pb <sub>2</sub> Fe <sub>6</sub> Te <sub>4</sub> O <sub>15</sub> (OH) <sub>10</sub> .8H <sub>2</sub> O		Mon. ۶	a=6.58Å b=9.68Å c=20.52Å	β=90°15' Z=2			Hölzel,93;Min.Mag.,1982, <u>46,</u> 257-259.
FAHEYITE	Be <sub>2</sub> (Mn,Mg,Na) Fe <sub>2</sub> <sup>34</sup> (PO <sub>4</sub> ) <sub>4</sub> .6H <sub>2</sub> O		Hex. P6 <sub>4</sub> 22?	a=9.43Å c=16.00Å	Z=3			Am.Min., 1964, 49, 395-398; Encyc.Miner.Nam., 94; Hőlzel, 159; Pov., 553, Str. Tab., 330.
FAHLEITE	CaZn <sub>5</sub> Fe <sub>2</sub> (AsO <sub>4</sub> ) <sub>6</sub> .14H <sub>2</sub> O		Orth.	a=6.60Å b=11.6Å c=22Å	Z=2			Am.Min.,1989, <u>74</u> ,501-502 (Abs.); Hölzel,164.
FAUSTITE	(Zn,Cu)Al <sub>6</sub> (PO <sub>4</sub> ) <sub>4</sub> . (OH) <sub>8</sub> .4H <sub>2</sub> O		Tric.	٥				RRW,205-206;Hölzel,172; Pov.,535;Str.Tab.,344.
FEDORITE	(K,Na) <sub>2.5</sub> (Ca,Na) <sub>7</sub> Si <sub>16</sub> O <sub>38</sub> (OH,F) <sub>2</sub> .H <sub>2</sub> O	(K,Na) <sub>2.5</sub> (Ca,Na) <sup>7</sup> • (OH,F) <sub>2</sub> (H <sub>2</sub> O) {2∞}{Si <sub>16</sub> O <sub>38</sub> ] (Calciotalc)	Tric. C 1	a=9.676Å b=16.706Å c=13.233Å	$\alpha = 93.35^{\circ}$ $\beta = 114.96^{\circ}$ $\gamma = 90.03^{\circ}$ Z = 2			Sov.Phys.Cryst., 1983, <u>28,</u> 95-96;Hölzel,230.Pov.,737; Str.Tab.,468;RRW,206.
FERRICOPIAPITE	(Fe,AI,Mg)Fe <sub>5</sub> (SO <sub>4</sub> ) <sub>6</sub> (OH) <sub>2</sub> .20H <sub>2</sub> C	(Fe,AI,Mg)Fe <sub>5</sub> (H <sub>2</sub> O) <sub>6</sub> (Fe,AI,Mg)° (SO <sub>4</sub> ) <sub>6</sub> (OH) <sub>2</sub> .20H <sub>2</sub> O {1∞}[Fe <sub>2</sub> °S <sub>3</sub> 'O <sub>12</sub> (OH) (H <sub>2</sub> O) <sub>4</sub> ] <sub>2</sub> {g}[Fe°(H <sub>2</sub> O) <sub>8</sub> ]] (Inser.d.Copiapite)		a=7.390Å b=18.213Å c=7.290Å		(Fe,Al,Mg)(2i) Fe <sub>I-II</sub> (2i) S <sub>I-III</sub> (2i) 		Am.Min., 1973, <u>58</u> , 314-322; Zeit.Krist., 1998, <u>213</u> , 141-150; Hölzei, 133;Can.Min., 1985, <u>23</u> , 53-56.
FLEISCHERITE	Pb <sub>3</sub> Ge(SO <sub>4)2</sub> (OH) <sub>6</sub> . .3H <sub>2</sub> O	. {3∞}[Pb <sub>3</sub> <sup>9]</sup> Ge°S₂¹O <sub>8</sub> (OH) <sub>6</sub> (H₂O)₃] (=Schaurteite)		a=8.867Å c=10.875Å				SR,41A,345-346;Am.Min., 1960,45,1313(Abs.);Hőlzel, 137;Encyc.Miner.Nam.,103.
FLUCKITE	CaMn(AsO <sub>3</sub> OH) <sub>2</sub> . .2H <sub>2</sub> O		Tric. P 1	a=8.459Å b=7.613Å c=6.98Å	α=82.21° β=98.25° γ=95.86° Z=2			Am.Min., 1980, <u>65,</u> 1066(Abs.); Hölzel, 164;Bull.Min., 1980, <u>103,</u> 122-128.
FLUELLITE	Al <sub>2</sub> (PO <sub>4</sub> )F <sub>2</sub> (OH). .7H <sub>2</sub> O	Al <sub>2</sub> °P¹ [O₄F²(OH)(H₂O) <sub>7</sub> ]	Orth. Fddd	a=8.546Å b=11.222Å c=21.158Å	Z=8	Al(16c)P(8a) O⊦⊪(32h) F(16g)H(32h)		Am.Min.,1966, <u>51,</u> 1579-1592; Hölzel,168;RRW,216-217;Str. Tab.,159;Pov.,549.
FLUORAPOPHY- LLITE	KCa <sub>4</sub> Si <sub>5</sub> O <sub>20</sub> (F,OH) .8H <sub>2</sub> O	Ca <sub>4</sub> <sup>[//</sup> K <sup>I8</sup> (F,OH) (H <sub>2</sub> O) <sub>8</sub> {2∞}[Si <sub>8</sub> <sup>t</sup> O <sub>20</sub> ] <sup>8</sup>	Tet. P4/mnc	a=8.978Å c=15.83Å		Ca(8h) K(2b) (F,OH)(2a)O <sub>I</sub> (8g) O <sub>II-IV</sub> (16i)	Ca <sub>4</sub> <sup>(7</sup> /K <sup>(3</sup> (F,OH) (H <sub>2</sub> O) <sub>6</sub> {2∞}{Si <sub>6</sub> <sup>6</sup> O <sub>20</sub> ] <sup>6</sup> HYDROAPOPHYLLITE	Am.Min., 1978, <u>63,</u> 196-202; Am.Min., 1971, <u>56,</u> 1222-1232; LF, 242; Hölzel, 226; LF, 242.
FOGGITE	CaAIPO <sub>4</sub> (OH) <sub>2</sub> .H <sub>2</sub> O {3∞}[Ca <sup>(a)</sup> Af'P <sup>1</sup> O <sub>4</sub> (OH) <sub>2</sub> (H <sub>2</sub> O)]	(3∞}[Ca <sup>[8]</sup> Al°P⁺O₄ (OH)₂(H₂O)]	Orth. A2 <sub>1</sub> 22	a=9.270Å b=21.324Å c=5.190Å	Z=8	Ca <sub>1</sub> (4a)Ca <sub>11</sub> (4b) Al <sub>-11</sub> (4b) P(8c) 		Am.Min., 1975, <u>60</u> ,965-971;SR, 41 <u>A</u> ,316-317;K/B,61;Hölzel, 176.

# A<sub>p</sub>B<sub>q</sub>C<sub>r</sub>D<sub>s</sub>E<sub>x</sub>.nAq. (cont.)

NAME	CHEMICAL	STRUCTURAL	SPACE	UNIT CELL DIMENSIONS	MENSIONS	EQUIVALENT	STRUCTURE TYPE	REFERENCES
COLIDMADICDITE		DP[6+3](LI O)	400	2-12 DOR	7-8	Dh. (49)		Bull Min 1985 108 859-885
	1 CO 2)4(OT)4	7207 C	. i	41.0000 10.0000 10.0000	017	1 (9P)		Am Min 1060 4E 1036 1061.
	O <sub>2</sub> E4.	{2\infty} U4" \ \OH)4	BDZ1M	D=16.400A		(ap)\/		AIII.MIII., 1800,43, 1020-1001,
				c=14.293A				Holzel, 90; Pov., 327; Str. I ab.,
								225;RRW,220.
FRANCEVILLITE		(Ba,Pb) <sup>[8]</sup> (H <sub>2</sub> O) <sub>5</sub>	Orth.	a=10.41Å	Z=4			Pov.,503;Str.Tab.,357;RRW,
	(VO <sub>4</sub> ) <sub>2</sub> .5H <sub>2</sub> O	{2\inf \{\text{UO}_2\}_2\V_2\O_8\}	Pcan	b=8.51Å				221;Hölzel,183.
FRANCOANEL I.I.	He(K Na),(Al Fe),	(Callicumo)	Trio	a=8 71Å	Z=6			Am.Min1976.61.1054(Abs.):
=	(PO <sub>4</sub> ) <sub>8</sub> .13H <sub>2</sub> O		R3c	b=82.8Å	)			Hölzel, 164; K/B, 154.
FRANZINITE	(Na,Ca) <sub>7</sub> (Si,Al) <sub>12</sub>		Trig.	a=12.884Å	Z=1?			Am.Min., 1977, <u>62</u> , 1259 (Abs.);
	O <sub>24</sub> (SO <sub>4</sub> ,OH) <sub>3</sub> .H <sub>2</sub> O		P 3m1	C=26.580A				H0lzel, 241.
FRITZSCHEITE	Mn(UO <sub>2</sub> ) <sub>2</sub> (VO <sub>4</sub> ) <sub>2</sub>	(H <sub>2</sub> O) <sub>4</sub> [Mn <sup>[6]</sup>	Orth.	a=10.59Å	¿=Z			Bull.Min., 1970, 93, 320-327;
	.4H2O	{2∞}[U <sup>[244]</sup> O <sub>2</sub> VO <sub>4]2</sub> ]	Pnma	b= 8.25Å				Hölzel, 129;RRW,223;LF,245;
		(«Autunite)		c=15.54Å				Pov.,556;Str.Tab.,352
GANOPHYLLITE	(K,Na) <sub>6</sub> (Mn,Al,Mg) <sub>24</sub>	L	Mon.	a=16.6Å	β=94°	(K,Na)(8f)		Min.Mag., 1986, <u>50</u> , 307-315;
	(Si,Al) <sub>40</sub> O <sub>96</sub> (OH) <sub>16</sub>		A2/a	b=26.6Å	S=8	Mnl-II(8f)		Hölzel,230;RRW,229;Pov.,437;
	.21H <sub>2</sub> O			c=50A		O <sub>I-X</sub> (8f)		Str. I ab., 443.
GARRONITE	NaCa <sub>2.5</sub> (Al <sub>6</sub> Si <sub>10</sub> )O <sub>32</sub>		Tet.	a=9.85Å	Z=2			Gottardi and Galli, 1985, 122;
	.13H <sub>2</sub> O	{2∞}[Ale Si 10 O 32]	14 <sub>1</sub> /amd?	c=10.32Å		,		Pov.,355;Str.Tab.,491;RRW,
CATHWANTE	(10) ( 00) ( 00)	(Feome)	Mon		0-0400			Am Min 1978 63 793-794
I I WOM D I WO	CaA/2(TO4)2(OT)2		Moll.	8=0.90/A	5-18-2 7-2			(Abs.): Hölzel 176
	) [			. ≪	7-7			(703.), 1 (912.0), 1 (0.
GEORGECHAOI-	KNaZrSi <sub>3</sub> O <sub>9</sub> .2H <sub>2</sub> O	K°Na°Zr°(H <sub>2</sub> O) <sub>2</sub>	Orth.	a=11.836Å	Z=4	K(4a)Na(4a)		Can.Min., 1985, <u>23</u> , 5-10, 1-4;
2		(1∞)[Si₃O9] (≈Gaidonnavite)	P2 <sub>1</sub> nb	b=12.940Å		Zr(4a)Sil-III(4a) Oliv(4a)		Hölzel,205.
GI ALICOCERI.			Trio	a=3.057Å	7=7	(- \VI-)		Min.Mag. 1985.49.583-590:
NITE	(OH) <sub>16</sub> .9H <sub>2</sub> O		~	c=32.52Å	 !			RRW,238; Hölzel,133.
GOBBINSITE	(Na,K)4Ca(Al <sub>6</sub> Si <sub>10</sub> )	(Na,K) <sub>4</sub> Ca(H <sub>2</sub> O) <sub>12</sub>	Orth.	a=10.108Å	Z=1	Na(4b)O <sub>I-VI</sub> (4b)		Zeit. Krist., 1985, 171, 281-289;
	O <sub>32</sub> .12H <sub>2</sub> O	(3∞)[Ale Si <sub>10</sub> O <sub>32</sub> ]	Pmn2 <sub>1</sub>	b=9.766Å		OvII-x(2a)		Hölzel,244.
GORDONITE		(Zeolite) Mg <sup>2</sup> Al, <sup>2</sup> P, <sup>1</sup>	Tric	a=5.24Å	α=107°25°			RRW,243;Pov.,560;Str.Tab.,
	8H,0	[0,(0H),(H,0),1	1	h=10.49Å	R=11104'			342:Hölzel 170:K/B 153:Min.
		(≈l aueite)	•	2 S S S S S S S S S S S S S S S S S S S	v=72022			Abs89M/0263.
		(211212)		7000	Z=1			
GORMANITE	(Fe,Mg) <sub>3</sub> AI <sub>4</sub> (PO <sub>4</sub> ) <sub>4</sub>		Tric.	a=11.79Å	α=90°50'			Can.Min.,1981, <u>19</u> ,381-387;
	(OH) <sub>6</sub> .2H <sub>2</sub> O		 	b=5.11Å	β=99°0'			Holzel,171.
				c=13.61A	7=90°5′			
1					7-7			

NAME	CHEMICAL	STRUCTURAL	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
GOUDEYITE	Cu <sub>6</sub> (AI, Y)(AsO <sub>4</sub> ) <sub>3</sub> (OH) <sub>6</sub> .3H <sub>2</sub> O		Hex. P6 <sub>3</sub> /m	a=13.472Å b=5.902Å	Z=2			Am.Min.,1978, <u>63</u> ,704-708; Hölzel,177.
GUILDITE	CuFe(SO <sub>4</sub> ) <sub>2</sub> (OH) .4H <sub>2</sub> O	Cu°Fe°S₂¹ [O₅(OH)(H₂O)₄]	Mon. P2 <sub>1</sub> /m	a=9.786Å b=7.134Å c=7.263Å	β=105°28' Z=2	Fe(2a)Cu(2e) S <sub>I-II</sub> (2e)		Am.Min., 1978, 63, 478-483; Am. Min., 1970, 55, 502-505; SR, 44A, 275: Pov., 601; Str., Tab., 295.
HAIWEEITE	Ca(UO <sub>2</sub> ) <sub>2</sub> Si <sub>6</sub> O <sub>15</sub> .5H <sub>2</sub> O	(H <sub>2</sub> O) <sub>5</sub> (3∞){Ca(UO <sub>2</sub> ) <sub>2</sub> Sie <sup>t</sup> O <sub>15</sub> ]	Mon. P2/c	a=15.4Å b=7.05Å c=7.10Å	β=107°52' Z=2			Am.Min.,1959,44,839-843; Pov.,457;Str.Tab.,386;RRW, 255;Hölzel,196;Am.Min.,1981, 66,610-625.
HANNAYITE	(NH4)2Mg3 (PO3OH)4.8H2O	Mg₃°P₄[(NH₄)₂O₁₂ (OH)₄(H₂O)৪] (≈Struvite)	P 1ic.	a=10.728Å b=7.670Å c=6.702Å	$\alpha = 97.87^{\circ}$ $\beta = 96.97^{\circ}$ $\gamma = 104.74^{\circ}$ Z = 1	Mg <sub>I</sub> (1a)Mg <sub>II</sub> (2i) P <sub>I-II</sub> (2i)N(2i)		Acta Cryst., 1976, <u>B32,</u> 2842- 2848;K/B, 82-83;Pov., 548;Str. Tab., 338;SR, <u>42A,</u> 338.
HARMOTOME	Ba <sub>2</sub> (Ca <sub>0.5</sub> ,Na) (Si <sub>11</sub> AI <sub>5</sub> )O <sub>32</sub> .12H <sub>2</sub> O	Ba <sub>2</sub> <sup>[12]</sup> (Ca <sub>0.5,</sub> Na) <sup>[6]</sup> (H <sub>2</sub> O), <sub>12</sub> {3∞}[Si <sub>11</sub> 'Al <sub>5</sub> <sup>†</sup> O <sub>32</sub> ] (Zeolite)	Mon. P2 <sub>1</sub> /m	a=9.879Å b=14.139Å c=8.693Å	β=124.20° Z=1	Ba(2e)Ca(4f) (Si,Al) <sub>I-VII</sub> (4f) 	Deriv. K <sup>[12]</sup> (Ca <sub>0.5</sub> ,Na) <sub>2</sub> <sup>[6]</sup> (H <sub>2</sub> O) <sub>6</sub> {3∞}[Sis <sup>‡</sup> Al3 <sup>‡</sup> O₁6] PHILLIPSITE	Acta Cryst.,1974, <u>B30</u> ,2426- 2433;SR,40A,287;Pov.,353;LF, 296;Str.Tab.,491;RRW,259.
HEINRICHITE	Ba(UO <sub>2</sub> ) <sub>2</sub> (AsO <sub>4</sub> ) <sub>2</sub> .10H <sub>2</sub> O	Ba(H <sub>2</sub> O)₁₀ {2∞}[U₂ <sup>°</sup> As₂ <sup>t</sup> O₁₂] (≈Zeunerite)	Tet. I4/mmm	a=7.13Å c=20.56Å	Z=2			Pov.,521;Str.Tab.,352;RRW, 265;Hölzel,179;Am.Min.,1958, 43,1134-1143.
HYDROBIOTITE	K(Mg,Fe) <sub>6</sub> (Si,Al) <sub>8</sub> O <sub>20</sub> .xH <sub>2</sub> O	K <sup>ITZ</sup> (Mg,Fe) <sub>6</sub> (H <sub>2</sub> O) <sub>x</sub> {2∞}{(Si,Al) <sub>8</sub> O <sub>20]</sub> (2s)c	Orth.	a=? b=? c=24.51Å?	Z=3			Hölzel,229;Encyc.Miner.Nam., 136;Am.Min.,1983, <u>88</u> ,420- 425;Pov.,445;RRW,287.
HYDROBORACI- TE	CaMg(B <sub>3</sub> O <sub>4</sub> (OH) <sub>3</sub> ) <sub>2</sub> .3H <sub>2</sub> O	Ca <sup>I9I</sup> Mg <sup>I9I</sup> (H <sub>2</sub> O) <sub>3</sub> {1∞}[B <sub>2</sub> 'B <sup>1</sup> O₄(OH) <sub>3]2</sub>	Mon. P2/c	a=11.769Å b=6.684Å c=8.235Å	β=102.55° Z=2	Mg(2a)Ca(2f) O₁(2e)O <sub>Ⅱ-ix</sub> (4g) B <sub>□-Ⅲ</sub> (4g)		SR,44A,232;SR,27,551-554; Pov.,481-482;SR,27,551-552; Str.Tab.,261;Can.Min.,1978, 16.75-80.
HYDROCHLORBO RITE	Ca <sub>2</sub> B <sub>4</sub> O <sub>4</sub> (OH) <sub>7</sub> Cl .7H <sub>2</sub> O	[CI(H <sub>2</sub> O) <sub>5</sub> ]Ca <sub>2</sub> (H <sub>2</sub> O) <sub>3</sub> {1∞}[B <sub>2</sub> ¹B <sup>t</sup> (OH)₄]	Mon. I2/a	a=22.783Å b=8.745Å c=17.066Å	β=96.705° Z=8	Cal-II(8f) BI-IV(8f) OI-IV(8f)		Am. Min., 1978, <u>63</u> , 814-823, Am. Min., 1977, <u>62</u> , 147-150; Pov. 491; Str. Tab., 264; Hölzel, 119; SR, 44A, 232-233.
HYDRODRESSE- RITE	BaAl₂(CO₃)₂(OH)₄ .3H₂O	(H₂O)₃{3∞}{Ba <sup>[3]</sup> Al₂ <sup>O</sup> (OH)₄{g}{C³O₃l₂] (≈Dundasite)	Tric. P 1	a=9.7545Å b=10.4069Å c=5.6322Å	$\alpha$ =95.69° $\beta$ =92.27° $\gamma$ =115.64° $Z$ =2	Ba(2i) Al <sub>i</sub> (1g) Al <sub>i</sub> (1c) Al <sub>iii</sub> (1e) Al <sub>i</sub> (1h) C <sub>i-ii</sub> (2i)		Can.Min., 1982, <u>20</u> , 253-262; Am.Min., 1979, <u>64</u> , 654-655; Höizel, 108; Encyc.Miner.Nam., 136.
HYDROHONESSI- TE HYDROTALCITE	NieFe <sub>2</sub> SO <sub>4</sub> (OH) <sub>16</sub> .7H <sub>2</sub> O Mg <sub>4</sub> Al <sub>2</sub> (OH) <sub>12</sub> CO <sub>3</sub> 3H <sub>2</sub> O		Hex. 7 Trig. R 3m	a=3.09Å c=10.80Å a=3.054Å c=22.81Å	Z=? Z=1/2			Min.Mag., 1981, 44, 333-337; Min.Mag., 1981, 44, 339-343. SR.40A, 306; RRW, 291; Str. Tab. 248-Dov. 742: Hölyel 107
HYDROXYAPO- PHYLLITE	KCa <sub>4</sub> Si <sub>8</sub> O <sub>20</sub> (OH,F)	Ca <sub>4</sub> <sup>17</sup> K <sup>l81</sup> (OH,F) (H <sub>2</sub> O) <sub>8</sub> {2∞}{Si <sub>8</sub> <sup>t</sup> O <sub>20</sub> ] <sup>8</sup>	Tet. P4/mnc	a=8.978Å c=15.83Å	Z=2	K(2b)Ca(8h) O <sub>I</sub> (8g) O <sub>IIIV</sub> (16i)	Ca <sub>4</sub> <sup>I/I</sup> K <sup>[8]</sup> (OH,F) (H <sub>2</sub> O) <sub>8</sub> {2∞}{Sis O <sub>20</sub> <sup>1</sup> HYDROXYAPOPHYLLITE	Am.Min., 1978, 63, 196-202; LF, 242; Hölzel, 226.

NAME	CHEMICAL	STRUCTURAL	SPACE	UNIT CELL DIMENSIONS	MENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
ILMAJOKITE	(Na,Ce,Ba) <sub>10</sub> Ti <sub>5</sub> Si <sub>14</sub> O <sub>22</sub> (OH) <sub>44</sub> .nH <sub>2</sub> O		Mon. ?	a=23Å b=24.4Å c=37Å	Z=9?			Am.Min.,1973, <u>58,</u> 139-140 (Abs.);Hölzel,193.
INDERBORITE	CaMg(B <sub>3</sub> O <sub>3</sub> (OH) <sub>5)2</sub> . 6H <sub>2</sub> O	(H <sub>2</sub> O) <sub>2</sub> {2∞}{Ca <sup>la</sup> lMg° B <sub>4</sub> B <sub>2</sub> Co(OH) <sub>10</sub> (H <sub>2</sub> O) <sub>4</sub> ]	Mon. C2/c	a=12.137Å b=7.433Å c=19.234Å	β=90.29° Z=4	Ca(4e)Mg(4a) B⊦⊪(8f)		Can.Min.,1994, <u>32</u> ,533-539; Acta Cryst.,1966, <u>21</u> ,A61(Abs.); Pov.,476-477;Str.Tab.,257; RRW,300.
INDIGIRITE	Mg <sub>2</sub> Al <sub>2</sub> (CO <sub>3</sub> ) <sub>4</sub> (OH) <sub>2</sub> .15H <sub>2</sub> O		٠.	a=? b=3.16Å c=6.23Å	ζ=Z			Am.Min.,1972, <u>57</u> ,326-327 (Abs.);Hölzel,108;Pov.,742; RRW,301.
INESITE	Ca <sub>2</sub> Mn <sub>7</sub> Si <sub>10</sub> O <sub>28</sub> (OH) <sub>2</sub> .5H <sub>2</sub> O	(H <sub>2</sub> O) <sub>5</sub> (3∞)[Ca <sub>2</sub> <sup>[79]</sup> Mn <sub>7</sub> ° '' Si <sub>10</sub> O <sub>28</sub> (OH) <sub>2</sub> ]	л <u>г</u> с 1-	a=8.889Å b=9.247Å c=11.975Å	$\alpha$ =88.15° $\beta$ =132.07° $\gamma$ =96.64° Z=1	Ca(2i)Mn <sub>I-IV</sub> (2i) Si <sub>I-V</sub> (2i)		Am.Min.,1978, <u>63</u> ,563-571;Am. Min.,1968, <u>53</u> ,1614-1634;RRW, 301;Pov.,419;Str.Tab.,426;SR, 309.
IOWAITE	Mg₄FeOCI(OH) <sub>8</sub> . 2-4H <sub>2</sub> O		Trig. R 3m	a=3.1183Å c=24.113Å Z=3/4?		(Fe,Mg)(3a) O <sub>I</sub> (36i)		Min.Mag, 1994, <u>58</u> ,79-85;RRW, 303;Pov.,324-325;Str.Tab., 215;Am.Min.,1967, <u>52</u> ,1261- 1271.
IRHTEMITE	Ca <sub>4</sub> MgH <sub>2</sub> (AsO <sub>4</sub> ) <sub>4</sub> . 4H <sub>2</sub> O		Mon. ؟	a=16.73Å b=9.48Å c=10.84Å	β=97°15' Z=4			Bull.Min.,1972, <u>95</u> ,365-370;Am. Min.,1974, <u>59</u> ,209(Abs.); Hölzel,164.
KAHLERITE	Fe(UO <sub>2</sub> ) <sub>2</sub> (AsO <sub>4</sub> ) <sub>2</sub> . 12H <sub>2</sub> O		Tet. P4 <sub>2</sub> /n	a=14.30Å c=21.97Å	Z=8			RRW,315;Pov.,522;Str.Tab., 351;Hölzel,179.
KAINITE	KMg(SO4)CI.3H <sub>2</sub> O	K <sup>laoj</sup> Cl(H <sub>2</sub> O) <sub>3</sub> {2∞}[Mg°S <sup>t</sup> O <sub>4</sub> ]	Mon. C2/m	a=19.72Å b=16.23Å c=9.53Å	β=94°55′ Z=16	K⊦ıı(4i)Kııı(8j) S⊦ıı(8i)Mgı(2d) Mgıı(2a)Mgııı(4f) Mgıv(8j)		Am.Min., 1972, <u>57,</u> 1325-1332; LF,319;RRW,315-316;Pov., 600;Str.Tab.,296;SR, <u>38A,</u> 332.
KAMBALDAITE	NaNi₄(CO₃)₃(OH)₃. 3H₂O	(H <sub>2</sub> O) <sub>3</sub> {3∞}[Na <sup>[6]</sup> Ni <sub>4</sub> ° {g}[C <sup>I</sup> O <sub>3</sub> ] <sub>3</sub> (OH) <sub>3</sub> ]	Hex. P6 <sub>3</sub>	a=10.340Å c=6.097Å	Z=2	Na(2a)Ni <sub>I</sub> (6c) Ni <sub>II</sub> (2b)C(6c)		Am.Min.,1985, <u>70</u> ,423-427;Am. Min.,1985, <u>70</u> ,419-422;Hölzel, 106.
KANEMITE	HNaSi <sub>2</sub> O <sub>4</sub> (OH) <sub>2</sub> . 2H <sub>2</sub> O		Orth. Pnmb	a=7.282Å b=20.507Å c=4.956Å	Z=4			Bull.Min.,1972, <u>95</u> ,371-382;Am. Min.,1974 <u>,59</u> ,210(Abs.).
KASOLITE	Pb(UO₂)SiO₄.H₂O	Pb <sub>2</sub> <sup>8(</sup> (H <sub>2</sub> O) <sub>2</sub> {2∞}{(∪ <sup>[7</sup> O <sub>2</sub> ) <sub>2</sub> (Si <sup>5</sup> O <sub>4)2</sub> ] (≈Uranophane)	Mon. P2₁/a	a=13.28Å b=6.96Å c=6.74Å	β=75°45′ Z=4	U(4e)Pb(4e) Si(4e)U⊦⊪(4e)		Sov.Phys. Cryst.,1965, <u>9,</u> 621- 622;SR <u>,29</u> ,405-406;Pov.,456- 457;Str.Tab.,386;RRW,319; LF,244.
KEHOEITE	(Zn,Ca)Al <sub>2</sub> (PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>2</sub> .5H <sub>2</sub> O	(Zn,Ca)(H₂O)₅ {3∞}[P₂¹Al₂¹O₀(OH)₂] (≈Analcime (cubic))	Cub. Ia 3d	a=13.7Å Z=4				Hölzel, 170;Pov.,532;Str.Tab., 358;RRW,320;Min.Mag.,1964, 33,799-803;Can.Min.1974,12, 352-353.
KEYSTONEITE	H <sub>0.8</sub> Mg <sub>0.8</sub> (Ni,Fe,Mn) <sub>2</sub> (FeO <sub>3</sub> ) <sub>3</sub> .5H <sub>2</sub> O		Hex. P6 <sub>3</sub> /m	a=9.344Å c=7.607Å	Z=1			Hölzel suppl

# A<sub>p</sub>B<sub>q</sub>C<sub>r</sub>D<sub>s</sub>E<sub>x</sub>.nAq. (cont.)

NAME	CHEMICAL	STRUCTURAL	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT	STRUCTURE TYPE	REFERENCES
KIDWELLITE	NaFe <sub>9</sub> (PO <sub>4</sub> ) <sub>6</sub> (OH) <sub>10</sub>		Mon.	a=20.61Å	β=112.64			Min.Mag.,1978,42,137-140;
	.5H <sub>2</sub> O		A2/m	b=5.15Å c=13.75Å	Z=2			Hölzel,173;K/B,157.
KITTATINNYITE	Ca <sub>2</sub> Mn <sub>3</sub> Si <sub>2</sub> O <sub>8</sub> (OH) <sub>4.</sub> .9H <sub>2</sub> O		Hex. P6 <sub>3</sub> /mmc	a=6.498Å c=22.78Å	Z=2			Am.Min.,1983, <u>68</u> ,1029-1032; Hölzel,187.
KLEEMANITE	ZnAl <sub>2</sub> (PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>2</sub>		Mon.	a=7.290Å	β=110.20			Min.Mag., 1979, 43, 93-95; K/B,
	ο <sub>2</sub> ης.		۲٤	c=9.762Å	7=7			16U;HOIZeI,1 / U.
KOLFANITE	Ca <sub>2</sub> Fe <sub>3</sub> O <sub>2</sub> (AsO <sub>4</sub> ) <sub>3</sub>		Mon.	a=17.86Å	β=96°			Am.Min., 1983, 68, 280 (Abs.);
	O2D3.			C=19.00A	71=7			H0lZel,1/5.
KOMAROVITE	(Ca,Mn)Nb <sub>2</sub> (Si <sub>2</sub> O <sub>7</sub> )		Orth.	a=21.30Å	Z=18			Am.Min.,1972,57,1315-1316
				c=17.19Å				(Abs.);Holzel,201;Pov.,744,368 RRW,330.
LABUNTSOVITE		Ti,Nb) <sub>9</sub> 'Si <sub>16</sub>	Mon.	a=14.18Å	y=117°	Ti <sub>I</sub> (2a)Ti <sub>II</sub> (4g)		Sov. Phys. Cryst., 1974, 18, 596-
	(SiO <sub>3</sub> ) <sub>16</sub> (O,OH) <sub>10</sub> .xH <sub>2</sub> O	[O <sub>48</sub> (O,OH) <sub>10</sub> (H <sub>2</sub> O) <sub>x</sub> (K,Na) <sub>8</sub> ]	12/m	b=15.48A c=13.70Å	Z=2	Ti <sub>III</sub> (4i)Si <sub>I-II</sub> (8j)		599;Hölzel,201;RRW,338;Str. Tab.,393;SR,39A,345;Pov.,745
LANDESITE	٦	(Mn,Mg) <sub>9</sub> °Fe <sub>3</sub> °P <sub>8</sub> °	Orth.	a=9.458Å	Z=4?	P(8d)		Min.Mag.,1980,43,789-795;
	OH)3.9H <sub>2</sub> O	[O <sub>32</sub> (OH) <sub>3</sub> (H <sub>2</sub> O) <sub>9</sub> ]	Pbna	b=10.185A		(Mn,Mg) <sub>(</sub> (4a)		RRW,340;Am.Min.,1964,49,
				C=8.543A	-	(Mn,Mg) <sub>II</sub> (8d)		1122-1125;P0V., /45,547;SK, 46A 326
LAUEITE	MnFe <sub>2</sub> (PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>2</sub> .	Mn°Fe <sub>2</sub> °P <sub>2</sub> ¹	Tric.	a=5.28Å	α=107°55°	Mn(1a)Fe <sub>i</sub> (1c)		Am.Min., 1965, 50, 1884-1892;
	.8H <sub>2</sub> O	[O <sub>8</sub> (OH) <sub>2</sub> (H <sub>2</sub> O) <sub>8</sub> ]	٦-	b=10.66Å		Fe <sub>II</sub> (1g)P(2i)		Am.Min., 1969, 54, 1312-1323;
		(≈Strunzite)		c=7.14Å	y=71°7′			K/B,67-68;RRW,344;Pov.,560-
1.100					1=7			301,017,000,000-000.
LAWSONBAUE-	(Mn,Mg) <sub>9</sub> Zn <sub>4</sub> (SO <sub>4</sub> ) <sub>2</sub>	(Mn, Mg) <sub>9</sub> Zn <sub>4</sub> S <sub>2</sub>	Mon.	a=10.50A	β=95.21°	(Mn,Mg) <sub>i</sub> (2a)		Am.Min., 1982, 67, 1029-1034;
¥		(=Torreyite)	741/0	c=16.41Å	7=7	Zni-ii(4e)S(4e)		AIII.MIII., 1979,049-952, Hölzel,132.
LAWSONITE	CaAl <sub>2</sub> Si <sub>2</sub> O <sub>7</sub> (OH) <sub>2</sub>	Ca <sup>[8]</sup> (H <sub>2</sub> O){3∞}	Orth.	a=8.795Å	Z=4	Ca(4c)AI(8d)		Am.Min.,1978, <u>63</u> ,311-315,
	.H2O	[Al <sub>2</sub> (OH) <sub>2</sub> (g)[Si <sub>2</sub> O <sub>7</sub> ]]	Ccmm	b=5.847Å		Si(8f)O <sub>I</sub> (4c)		RRW,348;Pov.,403;Str.Tab.,
				c=13.142A		O <sub>II</sub> (16h) O <sub>III-IV</sub> (8f)O <sub>V</sub> (4c)		390;SR, <u>44A</u> ,310-311;Hölzel, 199.
LEHNERITE	Mn(UO <sub>2</sub> ) <sub>2</sub> (PO <sub>4</sub> ) <sub>2</sub>		Mon.	a=7.04Å	β=90°18'			Min.Abs.,89M/0934; Hölzel,
	02Hg.		P2 <sub>1</sub> /n	b=17.16A c=6.95Å	Z=2			181;K/B,190,83-84.
LEIGHTONITE	K <sub>2</sub> Ca <sub>2</sub> Cu(SO <sub>4</sub> ) <sub>4</sub>		Orth.	a=11.67Å	2=4			RRW,351;Pov.,594;Str.Tab.,
	.2H <sub>2</sub> O		Fmmm	b=16.52A c=7.49Å				290;Hölzel,131;Can.Min.,1962, 7,272-277.
LEMOYNITE	(Na,K)2CaZr2Si10	(Na,K) <sub>2</sub> <sup>[5//]</sup> Ca <sup>[6]</sup>	Mon.	a=10.384Å	β=104.59			SR,42A,406-407;RRW,351;
	O <sub>26</sub> .5-6H <sub>2</sub> O	(H <sub>2</sub> O) <sub>5-6</sub> (3∞)[Zr, <sup>3</sup> Si <sub>10</sub> <sup>†</sup> O <sub>26</sub> ]	C2/c	b=15.947Å c=18.601Å	Z=4			Pov.,369;Str.Tab.,428.
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NAME	CHEMICAL	STRUCTURAL	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT	STRUCTURE TYPE	REFERENCES
LEUCOPHOSPHI-	K(Fe,AI) <sub>2</sub> (PO <sub>4</sub> ) <sub>2</sub>	K <sup>[6]</sup> (H <sub>2</sub> O){3∞}	12	a=9.782Å	β=102.24°	K(4e)Fe <sub>i-II</sub> (4e)		Am.Min., 1972, 57,397-410;SR,
1E	(OH).2H <sub>2</sub> O	[(Fe,Al) <sub>2</sub> (P <sup>t</sup> O <sub>4</sub> ) <sub>2</sub> (OH) (H <sub>2</sub> O)] (=Tinsleyite)	P2 <sub>1</sub> /n	b=9.658Å c=9.751Å	Z=4	P <sub> -  </sub> (4e)O <sub> -X </sub> (4e)		38A,314-315;Pov.,551;Str. Tab.,348;RRW,355;Hölzel,173.
LEVYNE	NaCa <sub>2.5</sub> (Al <sub>6</sub> Si <sub>12</sub> )O <sub>36</sub>	NaCa <sub>2.5</sub> (H <sub>2</sub> O) <sub>18</sub>	Trig.	a=13.338Å	a <sub>R</sub> =10.87Å	(Ca,Na) <sub>I-IV</sub> (6c)		Sr,41A,386;LF,288;RRW,355;
	.18H <sub>2</sub> O		R 3m	c=23.014Å	α=75°42'	(Ca,Na) <sub>v</sub> (3b)		SR,23,491-492; Pov.,351;Str.
	100/10/10	(Zeolite)	;	6=Z	Z <sub>R</sub> =3			1 ab.,492;LF,288.
LIEBIGIIE	Ca <sub>2</sub> (UO <sub>2</sub> )(CO <sub>3</sub> ) <sub>3</sub> .	Ca2 <sup>12</sup> (H <sub>2</sub> O) <sub>11</sub>	Orfin.	a=16.699A	8=7			Min. Abs., 84M/3848; Pov., 625; Str Tab 249 RRW 356
	2	15 ON POSTERIO CAISI	700	c=13.697Å				
LIOTTITE	(Ca,Na) <sub>8</sub> (Si,Al) <sub>12</sub>	(Ca,Na) <sub>8</sub> (H <sub>2</sub> O) <sub>2</sub>	Hex.	a=12.870Å	Z=3	Ca <sub>i</sub> (1d)Ca <sub>ii</sub> (2h)		Can.Min.,1996,34,1021-1030; Am.Min.,1977,62,321-326;
	2H <sub>2</sub> O	(≈C4,51,51,74 (3∞)[(Si,Al) <sub>12</sub> †O <sub>24</sub> ] (≈Cancrinite)	) -			Ca <sub>IV-V</sub> (2i)		Hölzel,240.
LIROCONITE	Cu <sub>2</sub> AlAsO <sub>4</sub> (OH) <sub>4</sub> .	Cu <sub>2</sub> 'Al'As'	Mon.	a=12.64Å	β=91°18′ 7=4	Cu(8f)Al(4a) As(4e)		Sov.Phys.Cryst.,1968,13,324-328:RRW.359:Pov.,517:Str.
		[b() 7: 1\b() () () () ()	į	c=9.86Å	·	(21.)		Tab.,346;Hölzel,172.
LOVDARITE	K <sub>2</sub> Na <sub>6</sub> Be <sub>4</sub> Si <sub>14</sub> O <sub>36</sub> .	K <sub>2</sub> Na <sub>6</sub> (H <sub>2</sub> O) <sub>9</sub>	Orth.	a=38.789Å	Z=2?			Am.Min., 1974, 59, 874 (Abs.);
	2 2 2 3	{3∞}[Si₁₄'Be₄'O₃6]	P21212	c=7.012Å				Acta Cryst., 1981, A37, C169 (Abs.); Am.Min., 1983, 68,474
								(Abs.).
LUETHEITE	Cu <sub>2</sub> Al <sub>2</sub> (AsO <sub>4</sub> ) <sub>2</sub>		Mon.	a=14.743Å	β=101°49'			Min.Mag.,1977,41,27-32;
	(On)4.n <sub>2</sub> O		F21/H	D=5.093A c=5.598Å	7=7	-		H0lZel,1 / Z.
LÜNEBURGITE	Mg <sub>3</sub> (B(OH) <sub>3</sub> ) <sub>2</sub>	(H <sub>2</sub> O) <sub>5</sub>	Tri i	a=6.3475Å	α=84.46°	Mg <sub>1</sub> (1a)Mg <sub>11</sub> (2i)		Am.Min., 1991, 76, 1400-1407;
	(PO4)2.5H2O	{2∞}{Mg <sub>3</sub> B <sub>2</sub> (OH) <sub>6</sub>	7	b=9.8027Å	$\beta = 106.40^{\circ}$	B(2I)P(2i)		RRW,367;Pov.,475;Str.Tab.,
		(P'O <sub>4</sub> ) <sub>2</sub> ]		c=6.2976Å	γ=96.40°			256;Hölzel,114;Encyc.Miner.
MACDONA! DITE	RaCa.Si.,O.,(OH).	RalfulCa, [6](HO),	Ę	a=14 081&	7=4	Ba(4c)Si(16h)		SR 33A 489-490-Am Min
	.10H <sub>2</sub> O (H <sub>2</sub> O) <sub>10</sub> {2∞} Si <sub>16</sub>   <sub>1</sub>	(H <sub>2</sub> O) <sub>10</sub> {2∞}[Si <sub>16</sub> <sup>1</sup> O <sub>36</sub> ]	Cmcm	b=13.109Å	I	Ca <sub>1</sub> (8f)Ca <sub>11</sub> (8d)		1965, 50, 314-340; Pov., 434;
		(»Hydroxyapophyllite)		c=23.560Å				Str.Tab.,468;RRW,369.
MAGNESIOAU-	(Mg,Cu)Al(SO <sub>4</sub> ) <sub>2</sub> Cl.	(Mg,Cu)°Al°S <sub>2</sub> t	Tric.	a=6.31Å	α=91.74°			Min.Abs.,89M/0935.
	<u>2</u> 5	(=Aubertite)		c=6.29Å	p=94.35° γ=82.67° Z=1			
MAGNESIOCO-	MgFe <sub>4</sub> (SO <sub>4</sub> ) <sub>6</sub> (OH) <sub>2</sub> .	(H <sub>2</sub> O) <sub>6</sub> (1∞){Mg°Fe <sub>3</sub> °	Tric 1.	a=7.342Å		Mg(1a)Fe <sub>I-II</sub> (2i)		Zeit.Krist., 1972, 135, 34-35;
1	22	Se C <sub>24</sub> (C <sub>172</sub> (T <sub>2</sub> C)8] (g)[Fe (H <sub>2</sub> O)6] ] (Subs d Conjanite)		c=7.389Å	p=102.13 γ=98.85° 7-1	O <sub>I-XXIII</sub> (2i)		Hölzel, 132; Str. Tab., 295; RRW, 373
MANASSEITE	1	(capadocarcobabas)	Hov	a=6 13Å	7=1			Dov 331-Str Tah 247-BBW
	4H <sub>2</sub> O		P6 <sub>3</sub> /mmc	b=15.37Å				378;Hölzel, 106.
MAPIMITE	Zn <sub>2</sub> Fe <sub>3</sub> (AsO <sub>4</sub> ) <sub>3</sub>	Zn <sub>2</sub> °Fe <sub>3</sub> °As <sub>3</sub> ¹	Mon.	a=11.415Å	β=107.74°	Zn <sub>I-II</sub> (2a)Fe <sub>I</sub> (2a)		Acta Cryst., 1981, <u>B37</u> , 1040-
	(OH)4.10H <sub>2</sub> O	[O <sub>12</sub> (OH)4(H <sub>2</sub> O) <sub>10</sub> ]	E	b=11.259A c=8.661Å	7=2	Feii(4b)Asi(2a) Asii(4b)		1043;Am.Min.,1982, <u>67,</u> 623- 624(Abs.);Hölzel,171.
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NAME	CHEMICAL	STRUCTURAL	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT	STRUCTURE TYPE	REFERENCES
MARGARITASITE	02)2	(Cs, H <sub>3</sub> O, K) <sub>2</sub> <sup>[11]</sup> (H <sub>2</sub> O)	Mon.	a=10.514Å	β=106.01		K <sub>2</sub> <sup>[11]</sup> (H <sub>2</sub> O) {2∞}	Am.Min., 1982, 67, 1273-1289;
	(VO <sub>4</sub> ) <sub>2</sub> .H <sub>2</sub> O	$\{2\infty\}\{(\bigcup^{\mathbb{Z}^*} \bigcirc_2)_2 \ (\bigvee_2^{[5]} \bigcirc_8)\}$	P2 <sub>1</sub> /a	b=8.425Å c=7.252Å	Z=2		[(U <sup>[2+5]</sup> O <sub>2)2</sub> (V <sub>2</sub> <sup>[5]</sup> O <sub>8</sub> )] CARNOTITE	Hölzel, 183.
MATULAITE	CaAl <sub>18</sub> (PO <sub>4</sub> ) <sub>12</sub> (OH) <sub>20</sub> .28H <sub>2</sub> O		Mon. P2 <sub>1</sub> /c	a=20.4Å b=16.7Å c=10.6Å	β=98.2°' Z=2			Am.Min.,1980, <u>65</u> ,1067(Abs.); Hölzel,176.
MAZZITE	K <sub>2</sub> CaMg <sub>2</sub> (Si,Al) <sub>36</sub> O <sub>72</sub> .28H <sub>2</sub> O	K₂CaMg₂(H₂O)₂8 {3∞}{(Si,Al)₃c¹O <sub>72</sub> ] (≈Gmelinite,Zeolite)	Hex. P6₃/mmc	a=18.392Å c=7.646Å	Z=3			Am.Min.1975, <u>60</u> ,340(Abs.); Min.Abs.,3276-3282;SR, <u>41A,</u> 388-389; Hölzel,244.
MBOBOMKULITE	(Ni,Cu)Al <sub>4</sub> (NO <sub>3</sub> ,SO <sub>4</sub> ) <sub>2</sub> (OH) <sub>12</sub> . 3H <sub>2</sub> O		Mon. ۶	a=10.171Å b=8.865Å c=17.145Å	β=95.37° Z=4			Am.Min., 1982 <u>, 67,</u> 415-416; Hölzel, 135.
MERLINOITE		(K,Na)₅(Ba,Ca)₂ (H₂O)₂₄ {3∞}[(Si₂₃Alց)O6₄] (Zeolite)	Orth. Immm	a=14.116Å b=14.229Å c=9.946Å	Z=1			SR. <u>45A,372;Am.Min.,1978,63,</u> 598; Hölzel,244.
LITE	ò	Na <sub>2</sub> <sup>Iel</sup> Ca <sub>2</sub> <sup>I/1</sup> (H <sub>2</sub> O) <sub>8</sub> {3∞}{Ale Sis O <sub>30</sub> ] (≈Natrolite,Zeolite)	Orth. Fdd2	a=18.4049Å b=56.655Å c=6.5443Å	7=8	Na(16b)Ca(16b) Al <sub>I-III</sub> (16b)Si <sub>I</sub> (8a) Si <sub>II-V</sub> (16b)		Acta Cryst.,1986, <u>C42</u> ,937-942; Pov.,356;Str.Tab.,487; Hölzel, 243.
META- -ANKOLEITE	K <sub>2</sub> (UO <sub>2</sub> ) <sub>2</sub> (PO <sub>4</sub> ) <sub>2</sub> . 6H <sub>2</sub> O	(H2O) <sub>6</sub> [K <sub>2</sub> <sup>[6]</sup> {2∞}[U <sup>[2+4]</sup> O <sub>2</sub> P <sup>†</sup> O <sub>4]2</sub>	Tet. P4/nmm	a=6.993Å c=8.891Å	Z=1		(H <sub>2</sub> O) <sub>6</sub> [ Ca <sup>[6]</sup> {2∞}[U <sup>[2+4]</sup> O <sub>2</sub> P <sup>†</sup> O <sub>4]2</sub> ] META-AUTUNITE	Am.Min., 1967, 52, 560(Abs.); Pov., 556; Str. Tab., 395; Hölzel, 180; K/B, 162LF: 246.
META-AUTUNITE	Ca(UO <sub>2</sub> ) <sub>2</sub> (PO <sub>4</sub> ) <sub>2</sub> . 6H <sub>2</sub> O	(H <sub>2</sub> O) <sub>6</sub> [ Ca <sup>l6]</sup> {2∞}[U <sup>[2+4]</sup> O <sub>2</sub> P <sup>‡</sup> O <sub>4]2</sub> ]	Tet. P4/nmm	a=6.980Å c=8.420Å	Z=1	U(2c)O <sub>I</sub> (2a) Ca(2c)O <sub>I-II</sub> (2c) O <sub>II</sub> (8i) P(2a)	(H <sub>2</sub> O) <sub>6</sub> [ Ca <sup>[6]</sup> {2∞}[U <sup>[2+4]</sup> O <sub>2</sub> P <sup>t</sup> O <sub>4]2</sub> ] META-AUTUNITE	LF,246;Wyckoff,1965,3,869- 871;SR,24,412-413;Pov.,556; Str.Tab.,352;RRW,395.
METAHEINRICHI- TE	Ba(UO <sub>2</sub> ) <sub>2</sub> (AsO <sub>4)2</sub> . 8H <sub>2</sub> O	(H <sub>2</sub> O) <sub>8</sub> [ Ba {2∞}[U <sup>[2+4]</sup> O <sub>2</sub> As¹O <sub>4]2</sub> ]	Tet. P4 <sub>2</sub>	a=7.07Å c=17.74Å	Z=2			Am.Min., 1958, 43, 1134-1143; Pov., 522; Str. Tab., 353; RRW, 397; Hölzel, 180.
METAKAHLERITE			⊤et. ?	a=20.25Å c=17.20Å	Z=16			Am.Min., 1986, 71, 1037-1044; Str. Tab., 353; RRW, 398; Hölzel, 179.
METAKIRCHHEI- MERITE	Co(UO <sub>2</sub> ) <sub>2</sub> (AsO <sub>4</sub> ) <sub>2</sub> . 8H <sub>2</sub> O		Tet. I4/mmm	a=14.29Å c=21.92Å	Z=4			Pov.,522;Str.Tab.,353;RRW, 398;Hölzel,180;Bull.Min.,1958, 81,67-68(Abs.);Am.Min.,1959, 44,466
METALODEVITE	ł		Tet. P4 <sub>2</sub> /m	a=7.16Å c=17.20Å	¿=Z			Bull.Min.,1972,95,360-364; Am.Min.,1974,59,210-211 (Abs.);Höizel,180
METANOVÁCEKI- TE			Tet. P4/n	a=7.16Å c=8.58Å	Z=1			Hölzel,179;Str.Tab.,352.
METASIDERO- NATRITE	Na <sub>2</sub> Fe(SO <sub>4</sub> ) <sub>2</sub> (OH). 2H <sub>2</sub> O		Orth. Pbnm	a=7.357Å b=16.002Å c=7.102Å	Z=4			Am.Min., 1973, <u>58,</u> 1080-1081; RRW,399;Hölzel,136;Str.Tab., 297;Pov.,600.

NAME		STRUCTURAL FORMULA	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
METATORBERNI- TE	Ou()	(H <sub>2</sub> O) <sub>8</sub> [ Cu <sup>8q</sup> {2∞}{U <sup>[2+4</sup> O <sub>2</sub> P <sup>‡</sup> O <sub>4</sub> ] <sub>2</sub> ] (∞Meta-antunite)	Tet. P4/n	a=6.972Å c=17.277Å	Z=2	U <sub>I-II</sub> (2c)Cu(2c) P(2a)O <sub>I-IV</sub> (2c) O <sub>V-VIII</sub> (8q) P(2b)	$(H_2O)_8[Cu^{8q}$ $\{2\infty\}[U^{[2+4]}O_2P^{\dagger}O_4]_2]$ METATORBERNITE	Zeit.Krist.,1993, <u>205,</u> 1-7;SR, <u>29,</u> 375-377;Pov.,556-557;Str. Tab.,352;RRW,400;Am.Min.,
		(Simple agrama)						1964,49,1603-1621;K/B,95-96.
METATYUYAMU- NITE	Ca(UO <sub>2</sub> ) <sub>2</sub> (VO <sub>4</sub> ) <sub>2</sub> . 3H <sub>2</sub> O	Ca(H <sub>2</sub> O) <sub>3</sub> {2∞}[(UO <sub>2</sub> ) <sub>2</sub> V <sub>2</sub> O <sub>8</sub> ] (≈Camotite)	Orth. Pnam	a=10.54Å b=8.49Å c=17.34Å	2=4			RRW,400;Str.Tab.,357;Pov., 503;Hölzel,183.
META- URANOCIRCITE-I	Ba(UO <sub>2</sub> ) <sub>2</sub> (PO <sub>4</sub> ) <sub>2</sub> . 8H <sub>2</sub> O	(H <sub>2</sub> O) <sub>8</sub> [Ba {2∞}{U <sup>[2+4</sup> O <sub>2</sub> P <sup>t</sup> O <sub>4</sub> ] <sub>2</sub> ]   I (≈Meta-autunite)	Tet. P4 <sub>2</sub> /n	a=6.96Å c=16.90Å	Z=2			RRW,401;Pov.,556;Str.Tab., 352;K/B,96-97;Hölzel,182.
META- URANOSPINITE	Ca(UO <sub>2</sub> ) <sub>2</sub> (AsO <sub>4</sub> ) <sub>2</sub> . 8H <sub>2</sub> O	(H <sub>2</sub> O) <sub>8</sub> [Ca <sup>l5</sup> ] {2∞}[U <sup>[2+4]</sup> O <sub>2</sub> As¹O <sub>4]2</sub> ] (≈Meta-autunite)	Tet. P4/nmm	a=7.19Å c=8.81Å	Z=1			Str.Tab.,353;RRW,401; Hölzel,180.
METAVAUXITE	FeAl <sub>2</sub> (PO <sub>4)2</sub> (OH) <sub>2</sub> . 8H <sub>2</sub> O	Fe <sup>°</sup> Al <sub>2</sub> 'P <sub>2</sub> ' [O <sub>8</sub> (OH) <sub>2</sub> (H <sub>2</sub> O) <sub>8</sub> ]	Mon. P2 <sub>1</sub> /c	a=10.22Å b=9.56Å c=6.94Å	β=97.9° Z=2	Fe(2a)Al(4e) P(4e)O <sub>L-IV</sub> (4e) O <sub>V-VIII</sub> (4e) for OH(4e)P4 <sub>2</sub> /nmc		SR <u>,32A,</u> 367-368;Pov.,560;Str. Tab.,341;RRW,402;Hölzel,170.
METAZELLERITE	Ca(UO <sub>2</sub> )(CO <sub>3</sub> ) <sub>2</sub> . 3H <sub>2</sub> O		Orth. Pbn2 <sub>1</sub>	a=9.718Å b=18.226Å c=4.965Å	2=4			Am.Min.,1966, <u>51</u> ,1567-1578; Pov.,625;Str.Tab.,249;RRW, 403;Hölzel,109.
METAZEUNERITE Cu(UO <sub>2</sub> ) <sub>2</sub> (AsO <sub>4</sub> ) <sub>2</sub> . 8H <sub>2</sub> O	ł	(H <sub>2</sub> O) <sub>8</sub> [Cu <sup>sq</sup> {2∞}[U <sup>[2+4]</sup> O <sub>2</sub> As <sup>†</sup> O <sub>4]2</sub> ]	Tet. P4/n	a=7.10Å c=17.70Å	Z=2	U(4d)2Cu(4d) As(4c)O <sub>I-II</sub> (4d) O <sub>II-IV</sub> (8g)	$(H_2O)_8$ [ $Cu^{8q}$ $\{2\infty\}[U^{[2+4]}O_2P^{4}O_4]_2$ ] METATORBERNITE	SR. <u>24</u> ,415-416Am.Min.,1964, 49,1603-1621;;RRW,403;Pov., 522;Str.Tab.,353;Hölzel,180.
MILARITE	(K,Na)Ca <sub>2</sub> (Be,Al) <sub>3</sub> Si <sub>12</sub> O <sub>30</sub> .H <sub>2</sub> O	(H <sub>2</sub> O)(K,Na) <sup>172</sup> /Ca <sub>2</sub> (Be,Al) <sub>3</sub> <sup>t</sup> (g)[Si <sub>12</sub> O <sub>30</sub> ] (=Amenite)	Hex. P6/mcc	a=10.40Å c=13.80Å	Z=2	K(2a)Ca(4c) (Be,Al)(6f) Si(24m)		Sov.Phys.Cryst.,1975, <u>19</u> ,460- 462;Pov.,380;Str.Tab.,409;RW 406;Hölzel,210;SR <u>,15</u> ,301-303.
MINYULITE	KAl <sub>2</sub> (PO <sub>4)2</sub> (OH,F). 4H <sub>2</sub> O	K <sup>(8)</sup> {2∞}{Al <sub>2</sub> °P <sub>2</sub> ¹O <sub>8</sub> (OH,F)(H <sub>2</sub> O)₄]	Orth. Pba2	a=9.337Å b=9.740Å c=5.522Å	Z=2	K(2a)Al(4c) P(4c)F(4c) O⊦v(4c)		Am.Min.,1977, <u>62,</u> 256-262; RRW,408;Pov.,551;Str.Tab., 346;SR, <u>43A,</u> 251;K/B,80-81.
MITRIDATITE	Ca <sub>2</sub> Fe <sub>3</sub> O <sub>2</sub> (PO <sub>4)3</sub> . 3H <sub>2</sub> O	Ca <sub>2</sub> <sup>[J]</sup> (H <sub>2</sub> O) <sub>3</sub> 2 $\infty$ }[Fe <sub>3</sub> °P <sub>3</sub> O <sub>14</sub> ] (=Arseniosiderite)	Mon. A2/a	a=17.53Å b=19.35Å c=11.25Å	β=95.92° Z=8			Min.Mag,1977, <u>41</u> ,527-528;Am. Min.,1974, <u>59</u> ,48-59;SR, <u>43A,</u> 256-257;RRW,409;Hölzel,175.
MIXITE	Cu <sub>6</sub> Bi(AsO <sub>4)3</sub> (OH) <sub>6</sub> . 3H <sub>2</sub> O		Hex. P6₃/m	a=13.646Å c=5.920Å	Z=2	Bi(2d)Cu(12i) As(6h)O <sub>⊦-V</sub> (6h) O <sub>VI</sub> (12i)		SR <u>,54A,</u> 250;Pov.,519;Str.Tab., 350;Hölzel,177.
MONGOLITE	Ca <sub>4</sub> Nb <sub>6</sub> Si <sub>5</sub> O <sub>24</sub> (OH) <sub>10</sub> .6H <sub>2</sub> O		Tet. ?	a=7.00Å c=29.0Å	Z=1			Am.Min.,1986, <u>71</u> ,1279(Abs.); Hölzel,192.

NAME	CHEMICAL	STRUCTURAL FORMULA	SPACE GROUP	UNIT CELL DIMENSIONS	MENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
	H <sub>8</sub> K₂TI₂(SO₄) <sub>8</sub> .11H₂O		Cub. Fd3c	a=25.29Å				Am.Min,1995,80,634(Abs.); Am.Min,1969,54,1496(Abs.); Pov.,606;Str.Tab.,555;RRW, 415; Hölzel,128.
MONTEREGIANI- TE-(Y)	K <sub>2</sub> Na <sub>4</sub> Y <sub>2</sub> Si <sub>16</sub> O <sub>38</sub> .10H <sub>2</sub> O	K₂ <sup>110</sup> (H₂O)₁₀Na4°Y₂° {2∞}{Si₁6O₃₀] (≈Hydroxyapophyllite)	Mon. P2 <sub>1</sub> /n	a=9.512Å b=23.956Å c=Å9.617	β=93.85° Z=2	K <sub>I-II</sub> (4e)Na <sub>I</sub> (4e) Na <sub>II</sub> . III(2d)Y(4e)		Am. Min, 1987, <u>72,</u> 365-374; Hölzel, 237.
MONTMORILLO- NITE	(Na,Ca) <sub>0.3</sub> (Al,Mg) <sub>2</sub> Si <sub>4</sub> O <sub>10</sub> (OH) <sub>2</sub> .nH <sub>2</sub> O	(H <sub>2</sub> O) <sub>n</sub> (Na,Ca) <sub>0.3</sub> (Al,Mg) <sub>2</sub> (OH) <sub>2</sub> {2∞}{Si <sup>4</sup> O <sub>10</sub>   <sup>(2,8)c</sup>	Mon. C2/m	a=5.18Å b=8.96Å c=9.97Å	β=99°54' Z=2		(H <sub>2</sub> O) <sub>n</sub> (Na,Ca) <sub>0.3</sub> °(Al,Mg) <sub>2</sub> ° (OH) <sub>2</sub> {2∞}{Si,¹O <sub>10</sub> ] <sup>(2,s)c</sup> MONTMORILLONITE	LF,232;Wyckoff <u>4</u> ,372-373; Pov.,445;Str.Tab.,445;RRW, 417;SR, <u>16</u> ,368-369.
MONTROYALITE	Sr <sub>4</sub> Al <sub>8</sub> (CO <sub>3</sub> ) <sub>3</sub> (OH,F) <sub>26</sub> .10H <sub>2</sub> O		7ric.	ځ				Can.Min.,1986, <u>24,</u> 455-459; Hölzel,108;Am.Min.,1987, <u>72,</u> 1025(Abs.).
MOUNTKEITHITE	(SO <sub>4</sub> ,CO <sub>3</sub> ) <sub>3.5</sub> (SO <sub>4</sub> ,CO <sub>3</sub> ) <sub>3.5</sub> (OH) <sub>24</sub> .11H <sub>2</sub> O		Hex.	a=10.698Å c=22.54Å	Z=0.5?	-		Min.Mag.,1981, <u>44</u> ,345-350; Hölzel,108.
MUNDRABILLAI- TE	(NH4) <sub>2</sub> Ca(PO <sub>3</sub> OH) <sub>2</sub> .H <sub>2</sub> O		Mon. Pm	a=8.643Å b=8.184Å c=6.411Å	β=98.0° Z=2			Min.Mag.,1983,4 <u>7,</u> 80-81: Hölzel,166;K/B,159.
MURMANITE	Na <sub>3</sub> (Ti,Nb) <sub>4</sub> O <sub>4</sub> (Si <sub>2</sub> O <sub>7)2:</sub> 4H <sub>2</sub> O	Na₃ <sup>°</sup> (Ti,Nb)₄°Si₄¹ [O₁a(H₂O)₄] (≈Bafertisite)	Tric. P 1?	a=8.700Å b=8.728Å c=11.688Å	$\alpha = 94.31^{\circ}$ $\beta = 98.62^{\circ}$ $\gamma = 105.6^{\circ}$ Z = 1			Sov.Phys.Cryst.,1986, <u>31,</u> 44- 48;Hölzel,200;Str.Tab.,395; Pov.,454.
NATROAPOPHY- LLITE	NaCa <sub>4</sub> Si <sub>6</sub> O <sub>20</sub> F .8H <sub>2</sub> O	Ca₄ <sup>('/</sup> Na <sup>!9</sup> F(H <sub>2</sub> O) <sub>8</sub> {2∞}[Si <sub>8</sub> O <sub>20]</sub> <sup>8</sup>	Orth. Pnnm	a=8.875Å b=8.881Å c=15.79Å	Z=2 (	Na(2b)F(2a) Cal-II(4g)SliII(8h) Ol-VII(8h)	Dist.deriv. Ca4 <sup>[7]</sup> K <sup>[8]</sup> (OH,F)(H <sub>2</sub> O) <sub>8</sub> {2∞}{Sis <sup>t</sup> O <sub>20</sub> 3 <sup>s</sup> HYDROXYAPOPHYLLITE	Am.Min.,1981, <u>86,</u> 410-415, 416-423;Hölzel,226;Encyc. Miner.Nam.,212.
NATROCHALCITE NaCu <sub>2</sub> (SO <sub>4</sub> ) <sub>2</sub> (OH)	NaCu <sub>2</sub> (SO <sub>4</sub> ) <sub>2</sub> (OH) .H <sub>2</sub> O	Na <sup>[8]</sup> {2∞}{Cu <sub>2</sub> °S <sub>2</sub> ¹O <sub>8</sub> (OH)(H <sub>2</sub> O)]	Mon. C2/m	a=8.75Å b=6.16Å c=7.44Å	β=118°40' Z=2	Cu(4e)Na(2d) S(4i)O <sub>I-II</sub> (4i) O <sub>III</sub> (8j)		SR. <u>22</u> ,470-471;Zeit.Krist., 1989 <u>,187,</u> 239-247Zeit.Krist., 1998, <u>213</u> ,141-150.
NATRODUFRENI- TE	NaFe <sub>6</sub> (PO₄)₄(OH) <sub>6</sub> . .2H <sub>2</sub> O	{3∞}[Na°Fe <sub>6</sub> °P4 <sup>t</sup> O <sub>16</sub> (OH) <sub>6</sub> (H <sub>2</sub> O) <sub>2</sub> ] (=Dufrenite)	Mon. C2/c	a=25.83Å b=5.150Å c=13.772Å	β=111°32' Z=4			Am.Min.,1983, <u>68</u> ,1039 (Abs.);Hölzel,171;Encyc. Miner.Nam.,212.
ICHI-	Na(Nb,Ti)Si <sub>2</sub> O <sub>6</sub> (O,OH).2H <sub>2</sub> O	Na <sup>[6]</sup> (H <sub>2</sub> O) <sub>2</sub> {3∞}[ {3∞}[(Nb,Ti)°Si <sub>2</sub> 'O <sub>6</sub> (O,OH)]	Orth. Pbam	a=7.408Å b=14.198Å c=7.148Å	Z=4	Na <sub>1</sub> (4g)Na <sub>11</sub> (4h) Si(8i)Nb(4h) (occ.v.)		Acta Cryst.,1973, <u>B29</u> ,1432- 1438;Min.Abs.,87M/1267; Hölzel,198.
NISSONITE	CuMgPO₄(OH). 2.5H₂O		Mon. C2/c	a=22.58Å b=5.027Å c=10.514Å	β=99°20' Z=8			Am.Min.,1967, <u>52</u> ,927(Abs.); Hölzel,167;Pov.,549;Str.Tab., 41;RRW,438.
NONTRONITE	Na <sub>0.3</sub> Fe <sub>2</sub> (Si,Al) <sub>4</sub> O <sub>10</sub> (H <sub>2</sub> O) <sub>1</sub> Na <sub>0.3</sub> ° (OH) <sub>2</sub> .nH <sub>2</sub> O Fe <sub>2</sub> °(OH) <sub>2</sub> {2∞}{(Si,Al) <sub>4</sub> to the control of t	(H <sub>2</sub> O) <sub>n</sub> Na <sub>0.3</sub> ° Fe <sub>2</sub> °(OH) <sub>2</sub> {2∞}{(Si,Al) <sub>4</sub> ¹O <sub>10</sub> ] <sup>(2,s)c</sup>	Mon. C2/m	a=5.23Å b=9.11Å c=15.5Å	β~98° Z=1?		(H <sub>2</sub> O) <sub>n</sub> (Na,Ca) <sub>0.3</sub> (Ai,Mg) <sub>2</sub> ° (OH) <sub>2</sub> {2∞}{Si4 <sup>O</sup> to] <sup>(2.8)</sup> MONTMORILLONITE	LF,232;RRW,440;Pov.,445; Str.Tab.,445;Am.Min.,1975; <u>60</u> ,840-848.

NAME	CHEMICAL	STRUCTURAL FORMIII A	SPACE	UNIT CELL DIMENSIONS	MENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
NOVÁCEKITE	Mg(UO <sub>2</sub> ) <sub>2</sub> (AsO <sub>4</sub> ) <sub>2</sub> . 9H <sub>2</sub> O	(H <sub>2</sub> O) <sub>9</sub> [ Mg <sup>[6]</sup> {2∞}[U <sup>[2+4]</sup> O <sub>2</sub> As <sup>t</sup> O <sub>4</sub> ] <sub>2</sub> ]	Tet. P4 <sub>2</sub> /n	a=7.11Å c=20.06Å	2=2			RRW,443;Str.Tab.,351;Pov., 751;Hölzel,179.
OGDENSBURGI-	(Ca.Zn.Mn),Fe	(≈Autunite)	Orth	a=11.351Å	Z=2?			Am.Min., 1987, 72, 409-412;
TE	(ASO <sub>4</sub> ) <sub>5</sub> (OH) <sub>11</sub> 5H <sub>2</sub> O		Bmmm	b=14.837Å	 i			Hölzel,176.
OHMILITE	Sr <sub>3</sub> (Ti,Fe)(Si <sub>2</sub> O <sub>6</sub> ) <sub>2</sub> (O.OH),2H <sub>2</sub> O	Sr <sub>3</sub> (Ti,Fe)(Si <sub>2</sub> O <sub>6)2</sub> Sr <sub>2</sub> <sup>[9]</sup> Sr <sup>9</sup> (Ti,Fe)° (O.OH), 2H <sub>2</sub> O (O.OH)(H <sub>2</sub> O),	(Mon. P2,/m	a=10.979Å	β=100.90° Z=2	Sr <sub>I-III</sub> (2e) Ti(2a)Si <sub>I-II</sub> (4f)		Am.Min.,1983, <u>68</u> ,811-817; Hölzel,225.
	- 3 1 1	{1∞}[Si₄O <sub>12</sub> ]		c=7.818Å	1			-
OJUELAITE	ZnFe <sub>2</sub> (AsO <sub>4</sub> ) <sub>2</sub> (OH) <sub>2</sub>	Zn°Fe2°As2 <sup>t</sup>	Mon.	a=10.247Å	β=94°22'			Am.Min.,1982, <u>67</u> ,623-624
	.4H <sub>2</sub> O	[O <sub>6</sub> (OH) <sub>2</sub> (H <sub>2</sub> O)₄] <sup>7</sup> ′′′ (≈Arthurite)	P2 <sub>1</sub> /c	b=9.665Å c=5.569Å	Z=2			(Abs.);Holzel,170.
ORTHOSERPIE-	Ca(Cu,Zn) <sub>4</sub> (SO <sub>4</sub> ) <sub>2</sub>	{3∞}[Ca <sup>[7]</sup> (Cu,Zn)₄ <sup>[6]</sup>	Orth.	a=22.10Å	Z=8			Am.Min., 1987, 72, 1026(Abs.);
Ā II		S₂'O <sub>8</sub> (OH) <sub>6</sub> (H₂O)₃] (≈Serpierite)	Pca21	D=6.20A c=20.39Å				213,141-150.
OURSINITE	(Co,Mg)(UO <sub>2</sub> ) <sub>2</sub> Si <sub>2</sub>		Orth.	a=12.74Å	Z=4			Am.Min., 1984, 69, 567 (Abs.);
	O <sub>2</sub> -0 <sub>2</sub> -0		-	c=7.050Å				1020, 190.
PAHASAPAITE	Li <sub>8</sub> (Ca,Li,K) <sub>10.5</sub> Be <sub>24</sub>	Liglepte](Ca,Li,K)10.5 leptel		a=13.781Å		(Ca,Li,K) <sub>(</sub> (24f)		Am.Min., 1989, 74, 1195-1202;
		(PO <sub>4</sub> ) <sub>24</sub> .38H <sub>2</sub> O (H <sub>2</sub> O) <sub>38</sub> (3∞){[Be <sub>24</sub> <sup>1</sup> P <sub>24</sub> <sup>1</sup> O <sub>86</sub> ] (≈Zeolite)	123	Z=1		(Ca,Li,K) <sub>II</sub> (8c) P(24f)Be(24f)		Hölzel, 159.
PARAROBERTSI-	Ca <sub>2</sub> Mn <sub>3</sub> (PO <sub>4</sub> ) <sub>3</sub> O <sub>2</sub> .		Mon.	a=8.825Å	β=101.19			Can.Min., 1989, <u>27</u> , 451-455;
1			P2 <sub>1</sub> /c	b=13.258Å c=11.087Å	Z=4			Hölzel suppl
PARAUMBITE	K <sub>3</sub> Zr <sub>2</sub> H(Si <sub>3</sub> O <sub>9)2</sub> .	K <sub>3</sub> Zr <sub>2</sub> °(H <sub>2</sub> O) <sub>3</sub>	Orth.	a=10.34Å	Z=4			Am.Min., 1984, 69, 813-814
	3H <sub>2</sub> O	{1∞}[Si₃Oց]₂. (≈Wollastonite)	٠.	b=13.29A c=14.55Å				(Abs.);Holzel,205
PARAVAUXITE	FeAl <sub>2</sub> (PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>2</sub>	Fe°Al2°P2[O <sub>8</sub> (OH) <sub>2</sub>	Tric.	a=5.233Å	α=106.9°	Fe(1a)Al <sub>l</sub> (1c)		SR,34A,332-333;Am.Min.,
	8. O	(H <sub>2</sub> O) <sub>8</sub> ] (≈Laueite)	<u>.</u>	b=10.541A c=6.96Å	$\beta = 110.8^{\circ}$	Alı(1g)P(Zl) O <sub>I-IX</sub> (Zl)		1962,41,1-6;H0lzel,171;Pov., 560-561;Str.Tab.,342;RRW,
PARSONSITE	Pb <sub>2</sub> (UO <sub>2</sub> )(PO <sub>4</sub> ).		Tric	8=6 862Å	z=101°26'			SR.22,422;Pov.,554;Str.Tab.,
	0-2H <sub>2</sub> O		P1	b=10.425Å	β=98°15'			350,RRW,465-466;Hölzel,182.
,				c=6.684A	γ=86°17' Z=2			
PARTHÉITE	Ca <sub>2</sub> Al <sub>4</sub> Si <sub>4</sub> O <sub>15</sub> (OH) <sub>2</sub> .	Ca <sub>2</sub> AI <sub>4</sub> °(OH) <sub>2</sub> (H <sub>2</sub> O) <sub>4</sub>	l	a=21.555Å	β=91.55°	Si-11(8f)All-11(8f)		Zeit.Krist., 1984, <u>169</u> , 165-175;
		{3∞}[Si₄'O₁₅] (≈Zeolite)	C2/c	b=8.761A c=9.304Å	Z=4	Ca(8f)O <sub> -Vii</sub> (8f) O <sub>Viii</sub> (4e)		Am.Min.,1980, <u>65,</u> 1068(Abs.); Hölzel,246.
PENTAGONITE	Ca(VO)Si <sub>4</sub> O <sub>10</sub> .	(H2O)4(3∞){Ca <sup>[7]</sup> V <sup>[5y]</sup>	1	a=10.386Å	Z=4	Ca(4a)V(4a)		Am.Min.,1973,58,405-411;Am.
		Si₄'O₁₁] (≈Cavansite)	CGMZ1	c=8.975Å		SILI(80)OLVI(90) OVII-IX(4a)		470-471;SR,39A,338.

NAME	CHEMICAL	STRUCTURAL	SPACE	UNIT CELL DIMENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
PETARASITE	Na <sub>5</sub> Zr <sub>2</sub> Si <sub>6</sub> O <sub>18</sub> (CI,OH).2H <sub>2</sub> O	Na <sub>5</sub> <sup>[7]</sup> (CI,OH)(H <sub>2</sub> O) <sub>2</sub> {3∞}[Zr <sub>2</sub> °Si <sub>6</sub> O <sub>18</sub> ]	Mon. P2 <sub>1</sub> /m	a=10.796Å β=113.21° b=14.493Å Z=2 c=6.623Å			SR, <u>46A,</u> 391;Min.Abs., 83M/5067;Hölzel,208.
PETERSITE-(Y)	Cu <sub>6</sub> (Y,Ca)(PO <sub>4</sub> ) <sub>3</sub> (OH) <sub>6</sub> .3H <sub>2</sub> O		Hex. P6 <sub>3</sub> /m	a=13.288Å Z=2 c=5.877Å			Am.Min., 1982, <u>67</u> , 1039-1042; Hölzel, 177; K/B, 161.
PHARMACOSI- DERITE	KFe4(ASO <sub>4</sub> ) <sub>3</sub> (OH) <sub>H</sub> 6-7H <sub>2</sub> O	K <sup>172</sup> (OH) <sub>4</sub> (H <sub>2</sub> O) <sub>6-7</sub> {3∞}[Fe <sub>4</sub> <sup>2</sup> AS <sub>3</sub> O <sub>12</sub> ]	Cub. P₹3m	a=7.98Å Z=1	Fe(4e)As(3d) O <sub>I</sub> (12i)O <sub>II-III</sub> (4e) O <sub>IV</sub> (3c)		Zeit.Krist., 1967, <u>125</u> , 92-108; SR, <u>32A,</u> 384-385; Pov., 507-508 Str. Tab., 348; RRW, 474-475.
PHILLIPSITE	K(Ca <sub>0.5,</sub> Na) <sub>2</sub> (Si <sub>5</sub> ,Al <sub>3</sub> )O <sub>16</sub> .6H <sub>2</sub> 0	K <sup>t/2</sup> (Ca <sub>0.5</sub> ,Na) <sub>2</sub> <sup>[6]</sup> (H <sub>2</sub> O) <sub>6</sub> (3∞}[Si <sub>5</sub> A <sub>3</sub> <sup>4</sup> O <sub>16]</sub> (Zeolite)	Mon. P2 <sub>1</sub> /m	a=9.865Å β=124.20° b=14.300Å Z=2 c=8.668Å	K(2e)Ca(4f) (Si,Al) <sub>I-IV</sub> (4f) 	K <sup>I™</sup> (Ca <sub>0.5</sub> ,Na) <sub>2</sub> <sup>[6]</sup> (H <sub>2</sub> O) <sub>6</sub> (3∞){Si₅ <sup>2</sup> Al₃¹O₁6] PHILLIPSITE	Acta Cryst., 1974, <u>B30,</u> 2426- 2433;SR, <u>27,</u> 692-693; Hölzel, 244;LF, 296;Pov., 353.
PHYLLOTUNGS- TITE	HCaFe₃(WO₄)₀ .10H₂O		Orth. P222	a=7.29Å Z=3 b=12.59Å c=19.55Å			Am.Min.,1986, <u>71</u> ,846(Abs.); Hölzel,140.
POLYHALITE	K₂Ca₂Mg(SO₄)₄ .2H₂O	K₂ <sup>I¹¹1</sup> Ca₂ <sup>!³I</sup> Mg°(H₂O)₂ {3∞}[Si⁴O₁₀] (≈Phillipsite)	т <del>п</del> 7.1.	a=11.69Å α=91.6° b=16.33Å β=90.0° c=7.60Å γ=91.9° Z=4	K(8i)Ca(8i) Mg(4a)Si <sub>⊢ll</sub> (8i) O <sub>⊡Vill</sub> (8i) (H <sub>2</sub> O)(8i)		LF,320;SR, <u>40A,</u> 309;SR <u>,26,</u> 449 ;Pov.,594;Str.Tab.,290.
POUGHITE	Fe <sub>2</sub> (TeO <sub>3</sub> ) <sub>2</sub> (SO <sub>4</sub> ) .3H <sub>2</sub> O	Fe <sub>2</sub> °(H <sub>2</sub> O) <sub>3</sub> {g}[Te <sup>(4)</sup> O <sub>3]2</sub> {g}[S <sup>t</sup> O <sub>4</sub> ]	Orth. Pmnb	a=9.66Å Z=4 b=14.20Å c=7.86Å			Am.Min.,1968, <u>53,</u> 1075-1080; SR, <u>37A,</u> 318;Pov.,565;Str.Tab., 228; Hölzel,93.
PROBERTITE	NaCaB <sub>5</sub> O <sub>7</sub> (OH)₄ .3H <sub>2</sub> O	Na <sup>t5</sup> [Ca <sup>19]</sup> (H <sub>2</sub> O) <sub>3</sub> {1∞}[B <sub>3</sub> *B <sub>2</sub> "O <sub>7</sub> (OH) <sub>4</sub> ]	Mon. P2 <sub>1</sub> /c	a=6.588Å β=99.97° b=12.560Å Z=4 c=13.428Å	Na(4e)Ca(4e) B <sub>I-V</sub> (4e) O <sub>I-IX</sub> (4e)		Acta Cryst., 1982, <u>B38,</u> 3072- 3075; Sov. Phys. Cryst., 1966, <u>10,</u> 513-522; Pov., 484-485.
PROTASITE	Ba(UO <sub>2</sub> ) <sub>3</sub> O <sub>3</sub> (OH) <sub>2</sub> .3H <sub>2</sub> O		Mon. Pn	a=12.2949Åβ=90.401° b=7.2206Å Z=2 c=6.9558Å			Am.Min.,1987, <u>72,</u> 1230-1238; Min.Mag.,1986, <u>50,</u> 125-128; Hölzel,90.
PSEUDOLAUEITE	MnFe <sub>2</sub> (PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>2</sub> .7-8H <sub>2</sub> O		Mon. P2 <sub>1</sub> /a	a=9.647Å β=104.63° b=7.428Å Z=2 c=10.194Å	Mn(2a)Fe(4e) P(4e)O <sub>⊦ix</sub> (4e)		Am.Min.,1969, <u>54,</u> 1312-1323; SR <u>,34A,</u> 331-332;Pov.,560- 561;Str.Tab.,341;RRW,495.
PYROAURITE	MgeFe <sub>2</sub> CO <sub>3</sub> (OH) <sub>n6</sub> .4H <sub>2</sub> O	Mg <sub>6</sub> °Fe <sub>2</sub> °(OH) <sub>16</sub> {2∞}[(C <sup>t</sup> O <sub>3</sub> )(H <sub>2</sub> O) <sub>4</sub> ]	Trig. R3m	a=3.1094Å Z=3/8 c=23.4117Å	(Mg,Fe)(3a) (OH)(6c)O(3b) 		Acta Cryst.,1968, <u>B24,</u> 972- 977;SR, <u>33A,</u> 439-440;SR, <u>40A,</u> 306;Pov.,755;Str.Tab.,248.
RAMEAUITE	K <sub>2</sub> CaO <sub>8</sub> (UO <sub>2</sub> ) <sub>8</sub> .9H <sub>2</sub> O		Mon. C2/c	a=13.97Å β=121°1' b=14.26Å Z=4 c=14.22Å			Min.Mag.,1972, <u>38,</u> 781-789; RRW,508;Hölzel,89.
RAPIDCREEKITE	Ca <sub>2</sub> (SO <sub>4</sub> )(CO <sub>3</sub> ) .4H <sub>2</sub> O	(30)[Ca <sub>2</sub> [891S <sup>1</sup> O <sub>4</sub> ] C''O <sub>3</sub> (H <sub>2</sub> O) <sub>4</sub> ]	Orth. Pcnb	a=15.517Å Z=8 b=19.226Å c=6.164Å	Ca <sub>I-II</sub> (8d)S(8d) C(8d)O <sub>I-VIII</sub> (8d)	,	Can.Min.,1996, <u>34</u> ,99-106;Can. Min.,1986 <u>,24</u> ,51-54;Hölzel, 137.

NAME	CHEMICAL	STRUCTURAL	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
RECTORITE	(Na,Ca)AI <sub>4</sub> (Si,AI) <sub>8</sub> O <sub>20</sub> (OH) <sub>4</sub> .2H <sub>2</sub> O	(H <sub>2</sub> O) <sub>2</sub> (Na,Ca)°Al <sub>4</sub> ° (OH) <sub>4</sub> {2∞}{(Si,Al) <sub>8</sub> <sup>†</sup> O <sub>20</sub> ] <sup>(2,8)</sup> c (≈Montmorillonite)	Mon.	a=5.13Å b=8.88Å c=23.85Å	β=96.3° Z=2			Sov.Phys.Cryst.,1971,16,250- 253;Hölzel,231;Pov.,445-446; RRW,512;Str.Tab.,463.
REEVESITE	Ni <sub>6</sub> Fe <sub>2</sub> CO <sub>3</sub> (OH) <sub>16</sub> . 4H <sub>2</sub> O	Nie Fe2 (OH) 16 {2∞}{(C <sup>t</sup> O <sub>3</sub> )(H <sub>2</sub> O)₄] (=Pyroaurite)	Trig. R3m	a=6.614Å c=45.54Å	Z=3			Am.Min.,1971, <u>56,</u> 1077-1081; Encyc.Miner.Nam.,254;Hölzel, 107;RRW,513;Str.Tab.,248.
RHODESITE	(K,Na) <sub>2</sub> Ca <sub>4</sub> Si <sub>16</sub> O <sub>36</sub> (OH) <sub>2</sub> .10H <sub>2</sub> O	(H <sub>2</sub> Ó)₁₀(K,Na)₂Ca₄ (OH)₂{2∞}[Sì₁₅ <sup>'</sup> Ó₃₅]	Orth. Pmam	a=23.416Å b=6.555Å c=7.050Å	Z=1	K(2e) Ca <sub>1</sub> (2c) Ca <sub>11</sub> (2d) Si <sub>1-11</sub> (4j) Si <sub>111</sub> (8l)		Zeit. Krist., 1992, <u>199</u> , 25-48; Zeit. Krist., 1979, <u>149</u> , 155-157; Pov., 434; Str. Tab., 469; Hölzel, 237.
RIVADAVITE	Na <sub>6</sub> Mg (B <sub>6</sub> O <sub>7</sub> (OH) <sub>6</sub> ) <sub>4</sub> . 10H <sub>2</sub> O		Mon. P2 <sub>1</sub> /m	a=14.779Å b=8.010Å c=11.128Å	β=105°57' Z=1			Am.Min.,1967 <u>,52</u> ,326-335; Pov.,487-488;Str.Tab.,261; RRW,520;Hölzel,116.
ROBERTSITE	Ca <sub>2</sub> Mn <sub>3</sub> O <sub>2</sub> (PO <sub>4</sub> ) <sub>3</sub> . 3H <sub>2</sub> O	Ca <sub>2</sub> <sup>[7]</sup> (H <sub>2</sub> O) <sub>3</sub> {2∞}[Mn <sub>3</sub> °P <sub>3</sub> ¹O <sub>12</sub> ] (=Arseniosiderite)	Mon. A2/a	a=17.36Å b=19.53Å c=11.30Å	β=96.0° Z=8			Am.Min.,1974 <u>,59</u> ,48-59;RRW, 521;Hölzel,175;K/B,157.
RUIZITE	Ca <sub>2</sub> Mn <sub>2</sub> Si <sub>4</sub> O <sub>11</sub> (OH) <sub>4</sub> .2H <sub>2</sub> O		Mon. C2/m	a=9.064Å b=6.171Å c=11.976Å	β=91.38° Z=2	Mn(4e)Ca(4i) Si⊦⊪(4i)		Am.Min.,1985 <u>,70,</u> 171-181;Min. Mag.,1977, <u>41,</u> 429-432;Hölzel, 204.
SALÉEITE	Mg(UO <sub>2</sub> ) <sub>2</sub> (PO <sub>4</sub> ) <sub>2</sub> . 10H <sub>2</sub> O	(H <sub>2</sub> O), <sub>0[</sub> Mg <sup>[5]</sup> {2∞}[U <sup>[2+4]</sup> O <sub>2</sub> P <sup>•</sup> O <sub>4]2</sub> ]	Mon. P2₁/c	a=6.951Å b=19.947Å c=9.896Å	β=135.17° Z=2	U(4e)Mg(2d) P(4e)O <sub>⊩XI</sub> (4e)	Dist.deriv. (H <sub>2</sub> O)₁0[ Ca <sup>[6]</sup> {2∞}[U <sup>[2+4]</sup> O <sub>2</sub> P <sup>t</sup> O <sub>4</sub> ]₂ ] AUTUNITE	Zeit.Krist.,1986 <u>,177</u> ,247-253; LF,245;RRW,533;Pov.,756, 521;Str.Tab.,351;Hölzel,179.
SANTACLARAITE	CaMn <sub>4</sub> Si <sub>5</sub> O <sub>14</sub> (OH) <sub>2</sub> . .H <sub>2</sub> O	(H₂O)HCa°Mn₄°(OH) {1∞}{Si₅¹O₁₅] (≈Rhodonite)	Tric. B 1	a=15.633 $\[A]$ $\alpha$ =109.71° b=7.603 $\[A]$ $\beta$ =88.61° c=12.003 $\[A]$ $\gamma$ =99.95° Z=4.	$\alpha$ =109.71° $\beta$ =88.61° $\gamma$ =99.95° Z=4			Am.Min.,1984 <u>,69</u> ,200-206;Am. Min.,1981 <u>,66</u> ,154-168;Hölzel, 222.
SANTAFEITE	(Ca,Sr,Na) <sub>3</sub> (Mn,Mg,Al,Fe) <sub>4</sub> (VO <sub>4</sub> ) <sub>4</sub> (OH) <sub>5-</sub> 2H <sub>2</sub> O		Orth. B22 <sub>1</sub> 2	a=9.25Å b=30.00Å c=6.33Å	Z=2?			Min.Mag,1986, <u>50,</u> 299-300;Am. Min.,1958, <u>43</u> ,677-687;RRW, 536;Pov.,496;Str.Tab.,349.
SAPONITE	(Ca,Na) <sub>0.3</sub> (Mg,Fe) <sub>3</sub> (Si,Al) <sub>4</sub> O <sub>10</sub> (OH) <sub>2</sub> . 4H <sub>2</sub> O	(H <sub>2</sub> O) <sub>4</sub> (Ca,Na) <sub>0.3</sub> (Mg,Fe) <sub>3</sub> (OH) <sub>2</sub> {2∞}{(Si,Al) <sub>4</sub> O <sub>10</sub> } <sup>(2.8)c</sup>	Mon. Cc	a=5.3Å b=9.21Å c=15.36Å	β~97° Z=2?			Str.Tab.,446;Hölzel,231;LF, 233;Pov.,446;Min.Abs.,78- 2716.
SAUCONITE	Na <sub>0.3</sub> Zn <sub>3</sub> (Si,Al) <sub>4</sub> O <sub>10</sub> (OH) <sub>2</sub> .4H <sub>2</sub> O	(H <sub>2</sub> O) <sub>4</sub> Na <sub>0.3</sub> Zn <sub>3</sub> (OH) <sub>2</sub> {2∞}{(Si,Al) <sub>4</sub> O <sub>10</sub>   <sup>(2.8)c</sup> (≈Vermiculite)	Mon. Cc	a=5.3Å b=9.17Å c=30.7Å	β~97° Z=1.5?			Hölzel,232;LF,233;Pov.,446; Str.Tab.,446.
SAYRITE	Pb <sub>2</sub> (UO <sub>2</sub> ) <sub>5</sub> O <sub>6</sub> (OH) <sub>2</sub> . 4H <sub>2</sub> O		Mon. P2 <sub>1</sub> /c	a=10.704Å b=6.960Å c=14.533Å	β=116.81° Z=2			Am.Min.,1984 <u>,69</u> ,568(Abs.); Hölzel,90.
SAZHINITE-(Ce)	Na <sub>2</sub> CeSi <sub>6</sub> O <sub>14</sub> (OH). 6H <sub>2</sub> O	(H <sub>2</sub> O) <sub>6</sub> HNa <sub>2</sub> <sup>IS</sup> Ce <sup>15+1</sup> {2∞}[Sic <sup>1</sup> O <sub>15</sub> ]	Orth. Pmm2	a=7.50Å b=15.62Å c=7.55Å	Z=2	Nal(2e)Na <sub>II</sub> (2g) Ce(2g)Si <sub>I-II</sub> (4i) Si <sub>III-IV</sub> (2g)		Sov.Phys.Cryst.,1980, <u>25,</u> 419- 423;SR, <u>46A</u> ,393-394;Am.Min., 1975 <u>,60,</u> 162(Abs.).

NAME	CHEMICAL FORMULA	STRUCTURAL FORMULA	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
SCAWTITE	Ca <sub>7</sub> (Si <sub>3</sub> O <sub>9)<sub>2</sub>(CO<sub>3</sub>)</sub>	Ca <sub>7</sub> °Si <sub>6</sub> ¹Ctr	Mon.	a=10.118Å	B=100°40'	Ca <sub>1</sub> (8i)Ca <sub>11</sub> (4h)		Acta Cryst 1973 B29 73-80
	2H <sub>2</sub> O	[O <sub>21</sub> (H <sub>2</sub> O) <sub>2</sub> ]	1 2/m	b=15.187Å		Ca <sub>111</sub> (2d)Si <sub>1</sub> (8i)		SR.31A.350-351.Pov. 419-
				c=6.626Å		Si <sub>II</sub> (4g)		420;Str.Tab., 424;RRW, 541;
								Hölzel,220;
SCHAURTEITE	Ca <sub>3</sub> Ge(SO <sub>4</sub> ) <sub>2</sub> (OH) <sub>6</sub> .	{3∞}[Ca₃ <sup>19</sup> ]Ge <sup>°</sup> S₂¹O <sub>8</sub>	Hex.	a=8.525Å	Z=2			Am.Min., 1968, 53,507 (Abs.);
	.3H <sub>2</sub> O		P6 <sub>3</sub> /mmc	c=10.803Å				Am.Min., 1967, 52,926-927
SCHERTELITE	(NH <sub>4</sub> ) <sub>2</sub> Mg(PO <sub>3</sub> OH) <sub>2</sub>		Orth.	a=11.49Å	Z=8	P <sub>LII</sub> (8c)Mq(8c)		Acta Civst 1972 B28 683-693
	.4H20	(OH) <sub>2</sub> (H <sub>2</sub> O) <sub>4</sub> ]	Pbca	b=23.66Å	)	O <sub>I-VIII</sub> (8c)		Am.Min., 1963, 48, 635-641;
				c=8.62Å				Pov., 548; Str. Tab., 338.
SCHODERITE	Al <sub>2</sub> (PO <sub>4</sub> )(VO <sub>4</sub> )		Mon.	a=16.26Å	β=91.77°			Am.Min.,1979, <u>64</u> ,713-720;Am.
	0.5 T20		P.Z/m?	b=30.60A c=12.55Å	Z=18			Min., 1962, 47, 637-648; Pov., 496: Str Tab 334
SERPIERITE	Ca(Cu,Zn)4(SO4)2	{3∞}[Ca <sup>[7]</sup> (Cu,Zn)₄°	Mon.	a=22.186Å	β=113.36°	Ca(8f)Cul.III(8f)		Acta Cryst 1968. B24. 1214-
	(OH) <sub>6</sub> .3H <sub>2</sub> O	S <sub>2</sub> <sup>t</sup> O <sub>8</sub> (OH) <sub>6</sub> (H <sub>2</sub> O) <sub>3</sub> ]	C2/c	b=6.250Å	Z=8	Cu <sub>IV-V</sub> (4e)		1221;Am.Min.,1969,54,328-
				c=21.853Å		S <sub>I-II</sub> (8f)		329(Abs.);Pov.,605;Str.Tab.,
			:					296;SR,33A,382-384.
SHABYNITE	Mg5BO3(OH)5		Mon.	٠,				Am.Min.,1981, <u>66</u> ,1101(Abs.);
	(CI,OH)2.4H2O		2	•				Hölzel,112.
SHIGAITE	Mn7Al4(SO <sub>4</sub> ) <sub>2</sub>		-igi	a=9.512A	-	Mn(18f) Al <sub>1</sub> (6c)		Can.Min., 1996, 34, 91-97; Am.
	(OH)22.8H2O		ž	C=33.074A 7=3		Al <sub>II</sub> (18f)		Min., 1986, 71, 1546 (Abs.);
	1000			2-3				Holzel, 132.
SIDERONALKILE	Na <sub>2</sub> Fe(SO <sub>4</sub> ) <sub>2</sub> (OH)		orth.	a=7.27A	Z=4			RRW,559;Pov.,600;Str.Tab.,
	ئ ا		E .	p=zu.50A c=7.15Å				297;Hölzel,136.
SIELECKIITE	Cu <sub>3</sub> AI <sub>4</sub> (PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>12</sub>		Tric.	a=9.41Å	α=90.25°			Min.Mag., 1988, <u>52</u> , 515-518;
	.2H <sub>2</sub> O			b=7.56Å	β=91.27°			Min.Abs.,88-6097;Hölzel,172.
				c=5.95Å	γ=104.02° Z=1			
SIGLOITE	FeAl <sub>2</sub> (PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>3</sub>	Fe <sup>o</sup> Al <sub>2</sub> °P <sub>2</sub> t	Tric	a=5.26Å	$\alpha = 106^{\circ}58^{\circ}$			Am.Min., 1962, 47, 1-8; Pov., 560-
		[O <sub>8</sub> (O <sub>2</sub> H)(H <sub>2</sub> O) <sub>8</sub> ]	<u>т</u>	b=10.52Å	β=111°30'			561;Str.Tab.,342;RRW,560;
		(=Laueite)		c=7.06Å	γ=69°30' Z=1			Hölzel,171;Am.Min.,1988,74, 1404(Abs.).
SINCOSITE	Ca(VO) <sub>2</sub> (PO <sub>4</sub> ) <sub>2</sub>	(H <sub>2</sub> O) <sub>5</sub> [Ca <sup>[6]</sup>	Tet.	a=8.895Å	Z=2		Deriv. (H <sub>2</sub> O) <sub>6</sub> [Ca <sup>16</sup> ]	Am.Min., 1985, 70, 409-410;
		{2∞}[VO P'O₄]₂ ]	٠.	c=12.727Å			{2∞}[U <sup>[2+4]</sup> O <sub>2</sub> P¹O <sub>4</sub> ] <sub>2</sub> ] META-AUTUNITE	Hölzel,177;K/B,175;Str.Tab., 353.
SJÖGRENITE	Mg <sub>6</sub> Fe <sub>2</sub> CO <sub>3</sub> (OH) <sub>16</sub>	Mg <sub>6</sub> °Fe <sub>2</sub> °C <sup>II</sup>	Hex.	a=3.13Å	Z=1/4	(Mg,Fe)(2a)		Min.Mag., 1967, 36, 465-479;
		[O <sub>3</sub> (OH) <sub>16</sub> (H <sub>2</sub> O) <sub>4</sub> ] (=Barbertonite)	P6 <sub>3</sub> /mmc	c=15.66A		C(2b)O <sub>1</sub> (4f) O <sub>11</sub> (6h)		SR,32A,422;Hölzel,107;Pov., 331:Str Tab, 247
SODIUM		(H,O) <sub>8</sub> [Na, <sup>[6]</sup>	Tet.	a=6.97Å	Z=1		Deriv. (H <sub>2</sub> O), o[Ca <sup>[5]</sup>	Am Min 1958 43 383(Abs.)
AUTUNITE	.8H <sub>2</sub> O	{2∞}[Ú <sup>[2+4]</sup> Ō₂P¹O₄]₂]	E	b=8.69Å			{2\infty\  \text{10}^{12+4}\  \text{0}_2\  \text{P}^4\  \text{0}_4\  \text{12}\  \text{AUTUNITE}	Am.Min., 1995, 80, 1329 (Abs.); LF, 245; RRW, 568.

NAME	CHEMICAL	STRUCTURAL FORMIII A	SPACE	UNIT CELL DIMENSIONS	MENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
SODIUM PHARMACOSI- DERITE	(Na,K) <sub>2</sub> Fe <sub>4</sub> (AsO <sub>4</sub> ) <sub>3</sub> (OH) <sub>5</sub> .7H <sub>2</sub> O		Cub. P 43m	a=8.012Å Z=2				Am.Min.,1986, <u>71,</u> 230(Abs.); Hölzel,172.
SODIUM- -URANOSPINITE	(Na <sub>2</sub> ,Ca)(UO <sub>2</sub> ) <sub>2</sub> (AsO <sub>4</sub> ) <sub>2</sub> .5H <sub>2</sub> O		Tet. P4/nmm	a=7.12Å c=8.61Å	Z=1			RRW,569;Hölzel,180.
SÖRENSENITE	Na <sub>4</sub> Be <sub>2</sub> Sn(Si <sub>3</sub> O <sub>9)2</sub> . 2H <sub>2</sub> O	Na <sup>t<sup>17</sup>Be<sub>2</sub>'Sn<sup>o</sup>(H<sub>2</sub>O)<sub>2</sub> {1∞}{Si₃'O<sub>9</sub>]₂<sup>my</sup> (≈Wollastonite)</sup>	Mon. C2/c	a=20.698Å b=7.442Å c=12.037Å	β=117.28° Z=4	Na <sub>-⊪</sub> (8f) Sn(4c) 		Acta Cryst.,1976, <u>B32,</u> 2553- 2556;Am.Min.,1966, <u>51,</u> 1547- 1548(Abs.);Hölzel,221.
SOUZALITE	(Mg,Fe) <sub>3</sub> (Al,Fe) <sub>4</sub> (PO <sub>4</sub> ) <sub>4</sub> (OH) <sub>6</sub> .2H <sub>2</sub> O		(Tric.) A2/m	a=12.58Å b=5.10Å c=13.48Å	β~113° Z=2			Encyc.Miner.Nam.,281;Hölzel, 171;Can,Min,,1981, <u>19</u> ,381- 387.
SPHENISCIDITE	(NH <sub>4</sub> ,K)(Fe,Al) <sub>2</sub> (PO <sub>4</sub> ) <sub>2</sub> (OH).2H <sub>2</sub> O		Mon. P2 <sub>1</sub> /n	a=9.75Å b=9.63Å c=9.70Å	β=102°34' Z=4			Min.Mag.,1986, <u>50,</u> 291-293; Hölzel,173.
STERCORITE	(NH4)Na(PO <sub>3</sub> OH) .4H <sub>2</sub> O	Na°P¹ [O₃(OH)(NH₄)(H₂O)₄] (≈Laueite)	Tric. P 1	a=10.636Å b=6.9187Å c=6.4359Å	$\alpha$ =90.46° $\beta$ =97.87° $\gamma$ =109.20° Z=2	P(2i) Na(2i) O <sub>I-V</sub> (2i) N(2i) 		Acta Cryst.,1974, <u>B30,</u> 504-510; SR, <u>40A,</u> 237-238.
STEWARTITE	MnFe <sub>2</sub> (PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>2</sub> .8H <sub>2</sub> O		P 17.C.	a=10.398Å $\alpha$ =90.10° b=10.672Å $\beta$ =109.10° c=7.223Å $\gamma$ =71.83° Z=2	$\alpha = 90.10^{\circ}$ $\beta = 109.10^{\circ}$ $\gamma = 71.83^{\circ}$ Z = 2	Mn(2i)Fe <sub>li</sub> (1a) Fe <sub>li</sub> (1d)Fe <sub>lii</sub> (2i) P <sub>I-li</sub> (2i)		Am.Min.,1974, <u>59</u> ,1272-1276; K/B,68-69;SR, <u>40A,</u> 247-248; Pov.,560;RRW,580.
STICHTITE	Mg <sub>6</sub> Cr <sub>2</sub> CO <sub>3</sub> (OH) <sub>16</sub> 4H <sub>2</sub> O	Mg <sub>6</sub> °Cr <sub>2</sub> °(OH)₁ <sub>6</sub> {2∞}[(C <sup>tr</sup> O₃)(H <sub>2</sub> O)₄] (=Pyroaurite)	Trig. R3m	a=6.19Å c=46.47Å	Z=3			Str.Tab.,248;RRW,582;Hölzel, 107;Min.Mag.,1973,39,377- 389;RRW,582.
STILBITE	NaCa <sub>4</sub> (Si <sub>27</sub> Al <sub>9</sub> )O <sub>72</sub> .30H <sub>2</sub> O	Na <sup>I6</sup> (Ca₁ <sup>I6</sup> (H <sub>2</sub> O) <sub>30</sub> {3∞}{Si₂²⁴Al₃¹O <sub>72</sub> ] (Zeolite)	Mon. C2/m	a=13.64Å b=18.24Å c=11.27Å	β=128° Z=1	Na(8j)(occ.0.22) Ca(4i)Si <sub>I-IV</sub> (8j) Si <sub>V</sub> (4g)	Na <sup>l5</sup> (Ca <sub>4</sub> <sup>[5]</sup> (H <sub>2</sub> O) <sub>3</sub> {3∞}{Si <sub>27</sub> <sup>4</sup> Al <sub>9</sub> <sup>t</sup> O <sub>72</sub> ] STILBITE	Acta Cryst.,1971, <u>B27</u> ,833-841, LF,299;RRW,583;Str.Tab.,490; Pov.,354;Hölzel,246.
STRELKINITE	Na <sub>2</sub> (UO <sub>2</sub> ) <sub>2</sub> (VO <sub>4</sub> ) <sub>2</sub> .6H <sub>2</sub> O		Orth. Pnmm	a=10.64Å b=8.36Å c=32.72Å	Z=8			Am.Min., 1975, <u>60,</u> 488-489 (Abs.); Hölzel, 183; K/B, 174.
STRONTIODRES- SERITE	(Sr,Ca)Al <sub>2</sub> (CO <sub>3)2</sub> (OH) <sub>4</sub> .H <sub>2</sub> O	(OH)₄{3∞}[(Sr,Ca) <sup>[9]</sup> Al₂ <sup>°</sup> (H₂O){g}[C <sup>u</sup> O <sub>3</sub> ] <sub>2</sub> ] (=Dundasite)	Orth. Pbnm	a=9.176Å b=16.010Å c=5.602Å	Z=4			Min.Abs.,80-0189;Hölzel,108.
STRUNZITE	MnFe <sub>2</sub> (PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>2</sub> . .6H <sub>2</sub> O	Mn°Fe₂°P₂¹ [O₅(OH)₂(H₂O)₅] (≈Laueite)	Д Т.с. Р 1-	a=10.228Å b=9.837Å c=7.284Å	$\alpha = 90.17^{\circ}$ $\beta = 98.44^{\circ}$ $\gamma = 117.44^{\circ}$ Z = 2			Min.Abs.,81-1246;SR, <u>44A,</u> 249- 250.
SVYAZHINITE	(Mg,Mn)(Al,Fe) (SO <sub>4)2</sub> F.14H <sub>2</sub> O	(Mg,Mn)°(Al,Fe)° S₂¹[O <sub>8</sub> (H₂O)₁₄F] (≈Aubertite)	PTric.	a=6.217Å b=13.306Å c=6.255Å	$\alpha$ =90.09° $\beta$ =93.50° $\gamma$ =82.05° Z=1			Am.Min.,1985 <u>,70,</u> 877(Abs).; Hőlzel,133.

NAME	CHEMICAL FORMULA	STRUCTURAL FORMULA	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
TAKOVITE	Ni <sub>6</sub> Al <sub>2</sub> CO <sub>3</sub> (OH) <sub>16</sub>		Trig.	a=3.0250Å	Z=0.38?			Am.Min.,1977,62,458-464;
	.4H <sub>2</sub> O		2	c=22.595Å				Hölzel,107.
TARANAKITE	H <sub>6</sub> K <sub>3</sub> (Al,Fe) <sub>5</sub> (PO <sub>4)8</sub> . .18H <sub>2</sub> O (?)	(Al,Fe)5°H <sub>6</sub> K3(H <sub>2</sub> O) <sub>14</sub> {2∞}[P <sub>8</sub> O <sub>20</sub> (H <sub>2</sub> O) <sub>4</sub> ] (≈Pvrophvllite)	Trig. R 3c	a=8.71Å c=96.1Å	<b>Z=6</b>			Am.Min., 1976,61,329-331; Pov.,558;Str.Tab.,338;RRW, 604:Hölzel,173
TERSKITE	Na <sub>4</sub> ZrSi <sub>6</sub> O <sub>15</sub> (OH) <sub>2</sub>		Orth.	a=14.195Å	Z=4			Am.Min., 1992, 77, 452 (Abs.);
	.H <sub>2</sub> O		Pnc2	b=14.750Å c=7.511Å				Am.Min., 1984, 69, 212 (Abs.); Hölzel 221
THOMSONITE	NaCa <sub>2</sub> (Al <sub>5</sub> ,Si <sub>5</sub> )O <sub>2</sub>	NaCa <sub>2</sub> (H <sub>2</sub> O) <sub>6</sub> (3∞}	Orth.	a=13.088Å	Z=4		NaCa <sub>2</sub> (H <sub>2</sub> O) <sub>6</sub>	Min.Abs.,86M/1429;RRW,613-
		(Zeolite)	<u>-</u>	c=13.229Å			{3∞}{Al5 Si5 O <sub>20</sub> } THOMSONITE	014;Pov.,355;Str.1ab.,487;   Hölzel,243;LF,292.
THORBASTNÄSI-	Th(Ca,Ce)(CO <sub>3</sub> ) <sub>2</sub> F <sub>2</sub>		Hex.	a=6.99Å	Z=3			Am.Min., 1965, 50, 1505 (Abs.);
ш			P 62c	b=9.71A				Pov.,618;Str.Tab.,243;RRW,   614;Hölzel,102.
TINSLEYITE	KAI <sub>2</sub> (PO <sub>4</sub> ) <sub>2</sub> (OH)	K <sup>[6]</sup> (H <sub>2</sub> O){3∞}[AI <sub>2</sub> °	Mon.	a=9.602Å	$\beta = 103.16^{\circ}$			Am.Min., 1984, 69, 374-376;
		(P'O <sub>4</sub> ) <sub>2</sub> (OH)(H <sub>2</sub> O)] (=Leucophosphite)	P2/n	b=9.532Å c=9.543Å	Z=4			Hölzel,173;K/B,155.
TORBERNITE	Cu(UO <sub>2</sub> ) <sub>2</sub> (PO <sub>4</sub> ) <sub>2</sub>	(H <sub>2</sub> O) <sub>10</sub> [ Cu <sup>[6]</sup>	Tet.	a=7.06Å	Z=2	Cu(2a) P(4d)	(H <sub>2</sub> O) <sub>10</sub> [Ca <sup>16]</sup>	RRW,622;Pov.,555-557;Str.
		${2\infty}[U^{I^2+4}O_2P^{i}O_4]_2]$	14/mmm	b=20.5Å		U(4e)	{2\infty}[U^{[2+4]}O_2P^tO_4]_2]	Tab.,351;Hölzel,179;LF,245;
							AUTUNITE	Wyckoff, 1965, 3,869-870.
TORREVITE	(Mg,Mn) <sub>9</sub> Zn <sub>4</sub> (SO <sub>4</sub> ) <sub>2</sub>	(Mg,Mn)9 Zn4'S2	Mon.	a=10.5Å	β~95°			Hölzel, 132; Am. Min., 1982, 67,
		[O <sub>8</sub> (OH) <sub>22</sub> (H <sub>2</sub> O) <sub>8</sub> ] (=Lawsonbauerite)	P21/C	b=9.6A c=16.4Å	Z=Z			1029-1034;Am.Min.,1979, <u>64,</u> 949-952
TOSUDITE	1		Orth.	2				Am Min. 1982 67 394-398
	(Si,AI) <sub>8</sub> O <sub>18</sub> (OH) <sub>12</sub>		2					Pov., 762; Str. Tab., 463; Hölzel,
	.5H <sub>2</sub> O							231;Am.Min.,1964,49,816 (Abs.);RRW,623.
TUPERSSUA-	NaFe <sub>3</sub> Si <sub>8</sub> O <sub>20</sub> (OH) <sub>2</sub>		Mon.	a=13.729Å	β=104.28			Am.Min.,1985,70,1332(Abs.);
TSIAITE	.5H <sub>2</sub> O		C2/m	b=18.000Å c=4.828Å	Z=3			Hölzel,236.
TURQUOISE	CuAl <sub>6</sub> (PO <sub>4</sub> ) <sub>4</sub> (OH) <sub>8</sub>	Cu <sup>[6]</sup> (H <sub>2</sub> O) <sub>4</sub> {3∞}[Al <sub>6</sub> °	Ji.	a=7.424Å		Cu(1a) P <sub>I-II</sub> (2i)	Cu <sup>[6]</sup> (H <sub>2</sub> O) <sub>4</sub> (3∞)[Al <sub>6</sub> °	Zeit.Krist.,1965, <u>121</u> ,87-113;LF,
		[4(4OT)8(TO)	<u>-</u>	b=7.629A c=9.910Å	β=79.71° γ=65.08°	Ali-II(ZI)	(OH)8(PO4)4] TURQUOISE	Z81;SK, <u>30A</u> ,395;P0v.,535;Str. Tab.,344;RRW,634.
TAINAMINE	10,010,010	(0.000	4	1000	1-7			
TYOYAMONITE	Ca(UO <sub>2</sub> ) <sub>2</sub> (VO <sub>4</sub> ) <sub>2</sub> .5-8H <sub>2</sub> O	Ca(H <sub>2</sub> O) <sub>5-8</sub> {2∞}[(UO <sub>2</sub> ) <sub>2</sub> (V <sub>2</sub> O <sub>8</sub> )] (≈Carnotite)	Orth. Pnan	a=10.36A b=8.36Å c=20.40Å	Z=4			RRW,636;Pov.,503;Str.Tab., 357;Hölzel,183.
UKLONSKOVITE	NaMgSO₄(OH,F) .2H <sub>2</sub> O	Na <sup>ISI</sup> Mg <sup>ISI</sup> S <sup>t</sup> IO <sub>4</sub> (OH.F)(H <sub>2</sub> O) <sub>2</sub> ]	Mon. P2./m	a=13.15Å b=7.19Å	β=90°37′ 7=4			Am.Min.,1965, <u>50</u> ,520-521 (Abs.) RRW 637-Str Tab. 296:
	7			c=5.72Å	-			Pov.,600;Hölzel,136.

NAME	CHEMICAL	STRUCTURAL FORMULA	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
ULEXITE	<b>8</b>	Ca <sup>I9</sup> Na <sup>o</sup> (H <sub>2</sub> O) <sub>5</sub> {g}[B <sub>3</sub> B <sub>2</sub> <sup>r</sup> O <sub>6</sub> (OH) <sub>6</sub> ]	Tric. P <sup>-</sup> 1	a=8.816Å b=12.870Å c=6.678Å	$\alpha = 90.36^{\circ}$ $\beta = 109.05^{\circ}$ $\gamma = 104.98^{\circ}$ Z = 2	Na(2i)Ca(2i) B <sub>I-V</sub> (2i)O <sub>I-VI</sub> (2i)		Am.Min.,1978, <u>63</u> ,160-171,Am. Min,1959, <u>44</u> ,712-719;RRW, 637;Pov.,484-485;Str.Tab., 259.
URALOLITE	Ca <sub>2</sub> Be <sub>4</sub> (PO <sub>4)3</sub> (OH) <sub>3</sub> .5H <sub>2</sub> O	S Ca₂ <sup>(7/</sup> (H₂O) <sub>5</sub> {2∞}[Be₄ <sup>(P¹</sup> O₄) <sub>3</sub> (OH) <sub>3</sub> ]	Mon. P2 <sub>1</sub> /n	a=6.550Å b=16.005Å c=15.969Å	β=101.64° Z=4	Cal.II(4e) Bel.IV(4e) Pl.III(4e) Ol.XII(4e)		Eur.J.Min.,1994, <u>6</u> ,887-896; RRW,639;Pov.,553;Str.Tab., 340;Hölzel,167.
URAMPHITE	NH4(UO <sub>2</sub> )(PO4) .3H <sub>2</sub> O		Tet.					Am.Min.,1959 <u>,44</u> ,464(Abs.); RRW,640;Pov.,556;Str.Tab., 351;Hölzel,181.
URANOCIRCITE	Ba(UO <sub>2</sub> ) <sub>2</sub> (PO <sub>4</sub> ) <sub>2</sub> .10H <sub>2</sub> O	(H <sub>2</sub> O) <sub>10</sub> [Ba <sup>[6]</sup> {2∞}[[U <sup>[2+4]</sup> O <sub>2</sub> P <sup>‡</sup> O <sub>4</sub> ] <sub>2</sub> ]	Tet. I4/mmm	a=7.01Å c=20.46Å	Z=2		(H <sub>2</sub> O) <sub>10</sub> [Ca <sup>(5)</sup> {2∞}[U <sup>[2+4]</sup> O <sub>2</sub> P <sup>t</sup> O <sub>4</sub> ] <sub>2</sub> ] AUTUNITE	Str.Tab.,351;Pov.,556;RRW, 640;Min.Abs.,1966, <u>17</u> ,695;LF, 245.
URANOPILITE	(UO <sub>2</sub> ) <sub>6</sub> SO₄(OH) <sub>10</sub> .12H <sub>2</sub> O		Mon.	a=? b=? c=8.91Å	β=? Z=?			RRW,641;Pov.,602-603;Str. Tab.,298;Hölzel,138.
URANOSPINITE	Ca(UO <sub>2</sub> ) <sub>2</sub> (AsO <sub>4</sub> ) <sub>2</sub> .10H <sub>2</sub> O	(H <sub>2</sub> O <sub>)10</sub> [[Ca] <sup>[6]</sup> {2∞} [U <sup>[2+4</sup> O <sub>2</sub> As'O <sub>4]2</sub> ]	Tet. I4/mmm	a=7.15Å c=20.61Å	Z=2		(H <sub>2</sub> O)₁0[Ca <sup>(8)</sup> {2∞}[U <sup>[24]</sup> O₂P <sup>t</sup> O₄]2] AUTUNITE	Str.Tab.,352;RRW,642;Pov., 522;Hölzel,179;LF,245.
USHKOVITE	MgFe <sub>2</sub> (PO <sub>4)2</sub> (OH) <sub>2</sub> . .8H <sub>2</sub> O	Mg°Fe <sub>2</sub> °P <sub>2</sub> ¹ [O <sub>8</sub> (OH) <sub>2</sub> (H <sub>2</sub> O) <sub>8</sub> ] (=Laueite)	Tric. P <sup>-</sup> 1	a=5.20Å b=10.70Å c=7.14Å	$\alpha = 108^{\circ}36^{\circ}$ $\beta = 106^{\circ}56^{\circ}$ $\gamma = 72^{\circ}43^{\circ}$ Z = 1			Am.Min.,1984 <u>,69,</u> 212-213 (Abs.);K/B,157;Hötzel,170.
VAUXITE	FeAl <sub>2</sub> (PO <sub>4)2</sub> (OH) <sub>2</sub> .6H <sub>2</sub> O	Fe°Al₂°P₂¹ [O₅(OH)₂(H₂O)₅] (≈Laueite)	Tric. P 1	a=9.13Å b=11.59Å c=6.14Å	$\alpha = 98.3^{\circ}$ $\beta = 92.0^{\circ}$ $\gamma = 108.4^{\circ}$ Z = 2	Fe <sub>I</sub> (1a)Fe <sub>II</sub> (1c) Al <sub>I</sub> (2i)Al <sub>II</sub> (1g) Al <sub>III</sub> (1e)		
	Mg <sub>0.7</sub> (Mg,Fe,Al) <sub>6</sub> (Si,Al) <sub>8</sub> O <sub>22</sub> (OH) <sub>2</sub> .8H <sub>2</sub> O	(H <sub>2</sub> O) <sub>8</sub> Mg <sub>0.7</sub> ° (Mg,Fe,Al) <sub>6</sub> °(OH) <sub>2</sub> {2∞}{(Si,Al) <sub>8</sub> O <sub>22</sub>   <sup>2,8,6</sup>	Mon. C2/c	a=5.349Å b=9.255Å c=28.89Å	β=97°7' Z=2?	Mg₁⋅៲៲(4e) Mg∿(4a) (Si,Al)⊦៲(8f)	$(H_2O)_8Mg_0.7^\circ$ $(Mg,Fe,A))_6^\circ(OH)_2$ $\{2\infty\}\{(Si,Al)_8^iO_{22}]^{(2.6)_c}$ VERMICULITE	Am.Min.,1966, <u>51</u> ,1124-1143; LF,233,Pov.,446;Str.Tab.,447; Hölzel,232.
VERTUMNITE	Ca <sub>4</sub> Al <sub>4</sub> Si <sub>4</sub> O <sub>6</sub> (OH) <sub>24</sub> . .3H <sub>2</sub> O		Mon. P2 <sub>1</sub> /m	a=5.744Å b=5.766Å c=25.12Å	β=119.72° Z=1			SR, <u>44A,</u> 316;Hölzel,192;Am. Min.,1977, <u>62</u> ,1061(Abs.);Min. Abs.,81-1207.
КОІТЕ	Ca <sub>0.3</sub> (Cr,Mg) <sub>2</sub> (Si,Al) <sub>4</sub> O <sub>10</sub> (OH) <sub>2</sub> .4H <sub>2</sub> O	Ca <sub>0.3</sub> (Cr,Mg) <sub>2</sub> (OH) <sub>2</sub> (H <sub>2</sub> O) <sub>4</sub> {2∞}[Si <sub>4</sub> 'O <sub>10</sub> ]	Mon. ؟	a=5.16Å b=8.94Å c=14.40Å	β=? Z=?		(H <sub>2</sub> O) <sub>n</sub> (Al,Mg)2° (OH) <sub>2</sub> {2∞}[Si₄ <sup>t</sup> O₁ <sub>0</sub> ] <sup>(2.s)c</sup> MONTMORILLONITE	
VOLTAITE	K <sub>2</sub> Fe <sub>8</sub> Al(SO <sub>4</sub> ) <sub>12</sub> .18H <sub>2</sub> O	(H <sub>2</sub> O) <sub>6</sub> {3∞}[K <sub>2</sub> <sup>[12]</sup> Fe <sub>8</sub> ° Al° S <sub>12</sub> O <sub>48</sub> (H <sub>2</sub> O) <sub>12</sub> ]	Cub. Fd3c	a=27.254Å Z=16				SR,39A,314-315;Pov.,595;Str. Tab.,287;RRW,656;Hölzel,130.
WALLKILLDELLI- TE	Ca <sub>4</sub> Mn <sub>6</sub> (AsO <sub>4</sub> ) <sub>4</sub> (OH) <sub>8</sub> .18H <sub>2</sub> O		Hex. P6 <sub>3</sub> /mmc	a=6.506Å c=23.49Å	Z=2			Am.Min., 1983, <u>68</u> , 1029-1032; Hölzel, 174.

NAME	CHEMICAL	STRUCTURAL FORMULA	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
WARDITE	NaAl <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>4</sub> . 2H <sub>2</sub> O	(H <sub>2</sub> O) <sub>2</sub> {3∞}{Na <sup>(8)</sup> Al <sub>3</sub> <sup>[6]</sup> P <sub>2</sub> O <sub>8</sub> (OH)₄]	Tet. P4 <sub>121</sub> 2	a=7.03Å c=19.04Å	Z=4	Na(4f)Al <sub>I</sub> (8g) Al <sub>II</sub> (4e)P(8g) O <sub>I-II</sub> (8g)		Min.Mag.,1970, <u>37,</u> 598-605; K/B,47-48;Pov.,551;Str.Tab., 347;RRW,662;Hölzel,173.
WEEKSITE	K <sub>2</sub> (UO <sub>2</sub> ) <sub>2</sub> Si <sub>6</sub> O <sub>15</sub> . 4H <sub>2</sub> O	t	Orth. Pnnb	a=14.26Å b=35.88Å c=14.20Å	Z=16	U(2a) Si(4e) O <sub>I-IV</sub> (4e) O <sub>V</sub> (8f) 		Am.Min.,1960 <u>,45</u> ,39-52;Am. Min.,1981 <u>,66</u> ,610-625;Pov., 457;Str.Tab.,386;RRW,664.
WELOGANITE	Na <sub>2</sub> (Sr,Ca) <sub>3</sub> Zr (CO <sub>3</sub> ) <sub>6</sub> .3H <sub>2</sub> O	(H <sub>2</sub> O) <sub>3</sub> Na <sub>2</sub> <sup>[876]</sup> (Sr,Ca) <sub>3</sub> <sup>[10]</sup> Zr <sup>[9]</sup> {g}[C <sup>T</sup> O <sub>3</sub> ] <sub>8</sub>	Tric. P1	a=8.966Å b=8.980Å c=6.730Å	$\alpha$ =102.72° $\beta$ =116.65° $\gamma$ =60.06° Z=1			SR,41 <u>A,</u> 295;Pov.,618;Str.Tab., 246;RRW,667;Hötzel,105.
WIGHTMANITE	Mg <sub>5</sub> O(BO <sub>3</sub> )(OH) <sub>5</sub> . 2H <sub>2</sub> O	Mgs <sup>°</sup> [(OH) <sub>5</sub> (H <sub>2</sub> O) <sub>2</sub> O{g}[B <sup>r</sup> O <sub>3</sub> ]] <sup>415,</sup>	Mon. I2/m	a=13.46Å b=3.102Å c=18.17Å	β=91.60° Z=4	Mg <sub>I-v</sub> (4a) B(4a) O <sub>I-v</sub> (4a)		Am.Min.,1974, <u>59,</u> 985-1004; Am.Min.,1962, <u>47</u> ,718-722;SR, <u>40A,</u> 222-224;Pov.,471;Str. Tab.,253.
WILCOXITE	MgAI(SO <sub>4)2</sub> F. 18H <sub>2</sub> O		Tric. P 1	a=14.90Å b=6.65Å c=6.77Å	$\alpha$ =117°26' $\beta$ =100°35' $\gamma$ =80°10' $Z$ =1			Min.Mag.,1983 <u>,47</u> ,37-40.
WILLHENDERSO- NITE	l	(KCa⊡ <sub>4</sub> )(H <sub>2</sub> O) <sub>5</sub> {3∞}[Al₃ <sup>t</sup> Si₃ <sup>t</sup> O <sub>12</sub> ]	Tr <u>i</u> c. P 1	a=9.23Å b=9.21Å c=9.52Å	$\alpha = 92.7^{\circ}$ $\beta = 92.4^{\circ}$ $\gamma = 90.1^{\circ}$ Z = 2		Dist.subs.deriv. (Ca⊟ <sub>5)</sub> (H <sub>2</sub> O) <sub>6</sub> {₃∞}{Al <sub>2</sub> <sup>t</sup> Si <sub>4</sub> 'O <sub>12</sub> ] CHABAZITE	Am.Min., 1984 <u>, 69,</u> 186-189; Hölzel, 245: LF, 287.
XANTHOXENITE	Ca <sub>4</sub> Fe <sub>2</sub> Pe <sub>4</sub> <sup>t</sup> 3H <sub>2</sub> O [O <sub>16</sub> (OH) <sub>2</sub> (H <sub>2</sub> O) <sub>3</sub> ] (=Stewartite)	Ca <sub>4</sub> °Fe <sub>2</sub> °P4¹ [O <sub>16</sub> (OH) <sub>2</sub> (H <sub>2</sub> O) <sub>3</sub> ] (=Stewartite)	Tr <u>i</u> c. P 1	a=6.70Å b=8.85Å c=6.54Å	$\alpha$ =92.1° $\beta$ =110.2° $\gamma$ =93.2° Z=1			Min.Mag.,1978 <u>,42</u> ,309-323; K/B,192;Pov.,550;Hölzel,175.
ш	(Ca,Na,K) <sub>0.2</sub> (Cu,Fe, Mg) <sub>2</sub> Si <sub>4</sub> O <sub>10</sub> (OH) <sub>2</sub> .3H <sub>2</sub> O		Mon. ?	a=5.26Å b=9.108Å c=14Å	β~90° Z=?			Am.Min.,1991 <u>,76,</u> 668-669;Min. Abs.,88M/1097;Hölzel,232.
ZAKHAROVITE	Na4Mn <sub>5</sub> Si <sub>10</sub> O <sub>24</sub> (OH) <sub>6</sub> .6H <sub>2</sub> O		Trig. P31m	a=14.58Å c=37.71Å	S=2			Am.Min.,1983, <u>68</u> ,1040;Hölzel, 247.
ZAPATALITE	Cu <sub>3</sub> AI <sub>4</sub> (PO <sub>4</sub> ) <sub>3</sub> (OH) <sub>9</sub> . 4H <sub>2</sub> O		Tet. ?	a=15.22Å b=11.52Å	Z=6			Min.Mag.,1972,38,541-544; K/B,161;Hölzel,172.
ZELLERITE	Ca(UO <sub>2</sub> )(CO <sub>3</sub> ) <sub>2</sub> . 5H <sub>2</sub> O		Orth. Pmn2 <sub>1</sub>	a=11.220Å b=19.252Å c=4.933Å	Z=4			Am.Min.,1966, <u>51,</u> 1567-1579; Pov.,625;Str.Tab.,249;RRW, 685;Hölzel,110.
ZEOPHYLLITE	Ca <sub>1</sub> 3Si <sub>10</sub> O <sub>28</sub> (OH) <sub>2</sub> F <sub>8</sub> .6H <sub>2</sub> O		T nig. 3	a=9.36 c=36.48Å Z=3	α <sub>R</sub> =13.31Å α=41°11' Z <sub>R</sub> =1	Са <sub>і</sub> (1а)Са <sub>ії-ііі</sub> (6f) Sі <sub>іті</sub> (2c) Sі <sub>ііі</sub> (6f)		Acta Cryst., 1968, <u>B28</u> , 2726- 2732; Pov., 430; Str. Tab., 467; RRW, 685; Hötzel, 236; Min. Mag., 1983, <u>47</u> , 397, 400.

NAME	CHEMICAL	STRUCTURAL	SPACE	UNIT CELL DIMENSIONS	MENSIONS	EQUIVALENT	STRUCTURE TYPE	REFERENCES
ZELINERITE	Cull 10.) (AsO.)	(H,O), (C,I,G	Tet	я=7 18Å	7=2	CHOLLEGE	(H,O), (Ca <sup>(6)</sup>	Str. Tab351:Pov521:RRW.
	16H <sub>2</sub> O	1 (220) 1 (244) 1 (4/mmm	I4/mmm	_	l l		{2∞}IU <sup>[2+4]</sup> O,As <sup>t</sup> O₄I,1	
	) 7:	171600170 011mz1					AUTUNITE	
ZINCOBOTRYO-	1	(Zn.Ma.Mn)°Fe°S,¹	Mon.	a=10,488Å B=100°50'	8=100°50'			Am.Min., 1964, 49, 1776-1777
	(SO <sub>4</sub> ) <sub>2</sub> (OH).7H <sub>2</sub> O	[O8(OH)(H2O)7]	P2,/n	b=17.819Å Z=4	Z=4			(Abs.);RRW,688;Pov.,601;Str.
		(=Botryogen)		c=7.185Å				Tab.,295.
ZINCOCOPIAPITE	ZnFe4(SO4)6(OH)2.	(H <sub>2</sub> O) <sub>R</sub> (1∞)[Zn <sup>o</sup> Fe <sub>4</sub> S <sub>n</sub> <sup>t</sup>	Tric.	a=7.35Å	$\alpha = 93^{\circ}50'$			Am.Min.,1964,49,1777(Abs.);
	20H,O	0,4(0H),(H0),l	P.1	b=18.16Å	B=101°30'			Can.Min., 1985, 23, 53-56; Pov.,
	ı	(g)[Fe <sub>0</sub> (H <sub>2</sub> O <sub>6</sub> )]		c=7.28Å	y=99°22'			601;Str.Tab.,295;RRW,688.
		(Subs.d.Copiapite)			Z=1			
ZINCOVOLTAITE K2Zn5Fe4(SO4)12.	K <sub>2</sub> Zn <sub>5</sub> Fe <sub>4</sub> (SO <sub>4</sub> ) <sub>12</sub> .	{3∞}IK, <sup>[12]</sup> Fe,°Zn₅°	Cub.	a=27.180Å				Am.Min.,1990, <u>75</u> ,244-245
	18H <sub>2</sub> O	S <sub>12</sub> O <sub>48</sub> (H <sub>2</sub> O) <sub>18</sub> ]	Fd3c	Z=16				(Abs.);Hölzel,suppl.
		(Subs.d.Voltaite)						
ZINC-ZIPPEITE	Zn <sub>2</sub> (UO <sub>2</sub> ) <sub>6</sub> (SO <sub>4</sub> ) <sub>3</sub>		(Orth.?)	a=8.80Å	Z=8			Hölzel, 138.
	(OH) <sub>10</sub> .16H <sub>2</sub> O		٠.	b=68.43Å				
				c=14.55Å				
ZORITE	Na <sub>6</sub> Ti <sub>5</sub> Si <sub>12</sub> O <sub>34</sub>	Na <sub>6</sub> Ti <sub>5</sub> [36] (H <sub>2</sub> O) 11	Orth.	a=23.241A Z=1?	Z=1?	(Ti,Nb) <sub>(</sub> 4e)		Sov.Phys.Cryst.,1979,24,686-
	(0.0H), 11H,0	(3∞)(Si,¹O <sub>3</sub> (O OH)₅I Cmmm	Cmmm	b=7.238Å		Ti <sub>II</sub> (4I) Si <sub>I</sub> (80)		693;Am.Min., 1973, <u>58</u> , 1113
		CALL STORY		C=6 955Å				(Ahs ):SR 45A 396

NAME	CHEMICAL	STRUCTURAL FORMULA	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
AJOITE	(K,Na)Cu <sub>7</sub> AlSi <sub>9</sub> O <sub>24</sub>		Tric.	a=13.637Å	α=107.16°			Am.Min., 1981, 66, 201-203:
	(OH) <sub>6</sub> .3H <sub>2</sub> O		<u>7</u> ::	b=14.507Å	β=105.45			Hölzel,223.
				c=13.620Å	γ=110.57° Z=3			
ANDERSONITE	Na <sub>2</sub> Ca(UO <sub>2</sub> )(CO <sub>3</sub> ) <sub>3</sub> .		Trig.	a=17.90Å	a <sub>R</sub> =13.11Å	U(18h) Ca(18h)		Acta Cryst.,1981, <u>B37</u> ,1496-
	6H <sub>2</sub> O		R.3m	c=23.734Å	α=86°56'	Na <sub> -11</sub> (18h)		1500;Str.Tab.,249;SR,28,177-
				Z=18	Z <sub>R</sub> =6	O <sub>I-IV</sub> (36i) O <sub>V-VII</sub> (18h)		178;Pov.,619;RRW,22.
ARDEALITE	Ca <sub>2</sub> (HPO <sub>4</sub> )(SO <sub>4</sub> ).	Ca <sub>2</sub> °P'S'[HO <sub>8</sub> (H <sub>2</sub> O) <sub>4</sub> ]	Mon.	a=5.721Å	β=117.26	i		Am.Min.,1978,63,520-527;
	5 C	(≈cypsum)	3	c=6.250Å	<b>5=7</b>	O(48) O -V   (48)		32:Hölzel 125
ARSENURANOS-	HAI(UO <sub>2</sub> )4(ASO <sub>4</sub> )4.		Tet.	a=7.16Å	Z=2			Min.Mag.,1978,42,117-128;
PATHITE	40H <sub>2</sub> O		P4 <sub>2</sub> /n	c=30.37Å				Am.Min.,1979,64,465(Abs.);
								Hölzel, 180.
ARSENURANYLI-			orth.	a=15.40Å	<b>2=</b> 8			Pov.,524;Str.Tab.,355;RRW,
<b>4</b>	(OH)4.6H <sub>2</sub> O		Bmmb	b=17.40A				38;Am.Min., 1959, 44, 208(Abs.);
		-	- 1	C-13.7.A				HOIZEI, 181.
ATTAKOLITE	(Ca,Mn,Fe)3Ale	(3∞)[(Ca,Mn,Fe)₃[³]	(Orth.)	a=17.188Å	$\beta = 113.83^{\circ}$	Ca(4g) Mn(4i)		Am.Min., 1992, 77, 1285-1291;
	(TO4)5(SIO4)2.5H2O	₹		D=11.4//A	) <del>                                     </del>	(a) 0(4i)		Pov 544-545 Str Tab 324
				- 1.3EEA		:		RRW.41:Hölzel.176.
BANNISTERITE	KCaMn <sub>21</sub> (Si,Al) <sub>32</sub>		Mon.	a=22.20Å	β=94°20′			Min.Mag., 1968, 36, 893-913;
	O <sub>76</sub> (OH) <sub>16</sub> .12H <sub>2</sub> O		A2/a	b=16.32Å	Z=2			Hölzel,230; Am. Min., 1981, 66,
				c=24.70A				1063-1067.
BARIO-ORTHO-	(Ba,Sr)₄Fe₂Ti₂O₂		orth.	a=10.477Å	Z=1?			Am.Min., 1982, <u>67</u> , 809-816;
JOAQUINITE	(SiO <sub>3</sub> ) <sub>8</sub> .H <sub>2</sub> O		 E	D=9.599A c=22.59Å				Hölzel, 206; Encyc. Miner. Nam., 31
BERGENITE	(Ba,Ca) <sub>2</sub> (UO <sub>2</sub> ) <sub>3</sub>		Mon.	a=22.32Å	β=93.0°			Am.Min., 1981, 66, 1102 (Abs.);
	(PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>4</sub>		P2 <sub>1</sub> /c	b=17.19Å	Z=18			K/B, 162; Hölzel, 182; Am. Min.,
	.5.5H <sub>2</sub> O			c=20.63Å				1960,45,909(Abs.);Str.Tab., 355.
BETA-	Ca(UO <sub>2</sub> ) <sub>2</sub>	Ca(H <sub>2</sub> O) <sub>5</sub> H <sub>2</sub>	Mon.	a=13.966Å	β=91.38°	Ca(4e) U <sub>I-II</sub> (4e)		Am.Min., 1986, 71, 1489-1493;
UKANOPHANE	(SIO <sub>3</sub> OH) <sub>2</sub> .5H <sub>2</sub> O	{2∞}[(UO <sub>2</sub> ) <sub>2</sub> (Si O <sub>4</sub> ) <sub>2</sub> ]	F21/a	b=15.443A c=6.632Å	7=7	Si <sub>I-II</sub> (4e)		KKW,67;Am.Min.,1981, <u>66,</u> 610-625.
BETPAKDALITE	(H,K) <sub>6</sub> Ca <sub>4</sub> Fe <sub>6</sub> As <sub>4</sub>			a=19.441Å	β=131.28			Am.Min., 1985, 70, 1333 (Abs.);
	Mo <sub>16</sub> O <sub>74</sub> .28H <sub>2</sub> O		C2/m	b=11.096Å c=15.25Å	Z=1 ?			Hölzel,178;Pov.,570-571;Str. Tab303.
BIJVOETITE - (Y)	(Y,Dy) <sub>2</sub> (UO <sub>2</sub> ) <sub>4</sub>			a=21.22Å	Z=16			Encyc.Miner.Nam.,39;Hölzel,
	(CO <sub>3</sub> )₄(OH) <sub>6</sub> .11H <sub>2</sub> O		C2ma	b=45.3A c=13.38Å				110;Am.Min.,1983, <u>68</u> ,1248 (Abs.)
		1	T			-		١٠٠٠٠ ١٠٠٠ ١٠٠٠ ١٠٠٠ ١٠٠٠ ١٠٠٠ ١٠٠٠ ١٠

	CHEMICAL	STRUCTURAL	SPACE	INIT CELL DIMENSIONS	ENSIONS	EQUIVALENT	STRUCTURE TYPE	REFERENCES
NAME	FORMULA	FORMULA	GROUP	ONII CELL DIM	200	POSITIONS		
BUKOVSKÝITE	Fe <sub>2</sub> (AsO <sub>4</sub> )(SO <sub>4</sub> )		Tic.		α=93.5°			Min.Abs.,87M/2138;Holzel,
	(OH).7H <sub>2</sub> O		т ::		β=115.96°			109, Am. Min., 1909, <u>04, 981-</u>
				c=10.284A γ= Z	γ=90.27° Z=4			992(ADS).
BLIDANGAITE	(No Co) Fo. Al.		Mon	1	R=110 91º			Am.Min., 1978, 63, 793 (Abs.);
	(PO <sub>4</sub> )8(O,OH) <sub>12</sub> . 4H <sub>5</sub> O		C2/c	b=5.048Å Z	Z=2			Hölzel,174.
CACOXENITE		(H <sub>2</sub> O) <sub>75</sub> {3∞}[Fe <sub>24</sub> °	Hex.	×	Z=2			Am.Min.,1985,70,220(Abs.);
		Al <sup>5by</sup> (O <sub>6</sub> (P <sup>6</sup> O <sub>4</sub> ) <sub>17</sub>	P6 <sub>3</sub> /m	c=10.550Å				K/B,28-29;Pov.,548-549;Str. Tab.,343;RRW,98.
CALCIOFERRITE	Ca₄Mg(Fe,Al)₄	70.50	2	2				Hölzel,175;Pov.,550;Str.Tab.,
	(PO <sub>4</sub> ) <sub>6</sub> (OH) <sub>4</sub> .13H <sub>2</sub> O		C2/c ?					349;RRW,100-101;Encyc.
								Miner.Nam.,52;Min.Abs.,
								84M/1917;Am.Min.,1969; <u>24,</u>
THE CONTRACT OF THE	10-10 10-0			C				Am Min 1964 49 1152-1153
CALCORMOLITE	Ca(OO <sub>2</sub> )3(MoO <sub>4</sub> )3		٠, ر	<u>.</u>				(Abs.):Pov. 572:Str.Tab303;
	(01)2.11120							RRW,102;Hölzel,141.
CANAVESITE	May(HBO3)(CO3).		Mon.	a=23.49Å B=	8=114.910			Hölzel, 113; Encyc. Miner. Nam.,
	5H <sub>2</sub> O		P2/m		Z=12			54;Can.Min.,1978,16,69-73.
CARBOBORITE	Ca <sub>2</sub> Mg(B(OH) <sub>4</sub> ) <sub>2</sub>		Mon.	<b>∞</b> <	3=91°41'			Encyc.Miner.Nam.,55;Pov.,
	(CO <sub>3</sub> ) <sub>2</sub> .4H <sub>2</sub> O		P2 <sub>1</sub> /m	b=6.68Å	Z=4			475;Str. I 80.,256;Am. Min., 1965 50 262-263(Abs.).
				- 10.09A	0.0	(0C) 0 (4 (0 0) V		Am Min 1088 73 308-404
CETINEITE	K <sub>3.5</sub> (Sb <sub>2</sub> O <sub>3</sub> ) <sub>3</sub> (SbS <sub>3</sub> )	(H <sub>2</sub> O) <sub>2</sub> {3∞}[K <sub>3,5</sub> "	Hex.	a=14.2513A Z=Z	7 = 7	K(6c) Na(2a)		MILIMIII., 1900, 13, 390-101,
		(Sb <sub>2</sub> <sup>[37]</sup> O <sub>3</sub> ) <sub>2</sub> Sb <sup>[37]</sup> S <sub>3</sub> (OH) <sub>0.5</sub> ]	P6 <sub>3</sub>	c=5.900A		1/25b -  (2b) Sb   - v(6c)		H0lzel,47.
CHERNIKOVITE	(H <sub>3</sub> O)(UO <sub>2</sub> )PO <sub>4</sub> .		Tet.	a=7.020Å	Z=2			Encyc.Miner.Nam.,62;Hölzel,
	3H2O	30				1000000		C LAIR 400F 7 4930 4940.
CHIAVENNITE	CaBe <sub>2</sub> MnSi <sub>5</sub> O <sub>13</sub>	Ca <sup>12</sup> /Mn <sup>12</sup> (H <sub>2</sub> O) <sub>2</sub>	orth.	a=8.729A 4	7=4	Ca(4c) Mn(4a)		Am Min 1983, L. 1338-1340,
	(OH) <sub>2</sub> .ZH <sub>2</sub> O	{3∞}[Si₅Be₂(OH)₂]	T D D D	D=31.326A C=4 903Å		Si(4c) Sill-III(8d)		Hölzel, 222.
CHUDOBAITE	(Ma Zn) (AsO.)		Tric		v=80.5°			Am.Min., 1989, 74,676-684; Am.
	(ASO <sub>2</sub> OH), 10H <sub>2</sub> O		1	∞4	B=84.23°			Min.,1960,45,1130(Abs.);Am.
	7/				v=82.12°			Min., 1977, 62, 599 (Abs.); Pov.,
					Z=1			516;Str.Tab.,338;RRW,131;
				- 1				A TOI 200 000 000 100 100 100 100 100 100 100
CHUKHROVITE -	Ca <sub>3</sub> (Y,Ce)Al <sub>2</sub> (SO <sub>4</sub> )	(H <sub>2</sub> O) <sub>10</sub> (3∞)[Ca <sub>3</sub> °	G. F. F.	a=16.710A	Z=8	Ca(32e)		Min 1960 45 1132-1133:Pov.
(£)-	F <sub>13</sub> .10H <sub>2</sub> O	(Y,Ce) Al2 S O4F 13]	3			(Υ,Ce) ( ((30g))		664;Str.Tab.,161;RRW,131.
CLINOUNGEMA- CHITE	K <sub>3</sub> Na <sub>9</sub> Fe(SO <sub>4</sub> ) <sub>6</sub> (OH) <sub>2</sub> 9H <sub>2</sub> O		Mon.	β ¿	β=110°40'			Pov.,600;Str.Tab.,298;RRW, 137;Hölzel,136.
	7: ::::(::::)							

	CHEMICAL	STRUCTURAL	SPACE	Old Cloud State Control	014010141141	EQUIVALENT	avt adutations	
NAME	FORMULA	FORMULA	GROUP	ONII CELL L	HMENSIONS	POSITIONS	SIRUCIONE ITE	REFERENCES
COBALT-	Ca <sub>2</sub> (UO <sub>2</sub> ) <sub>6</sub> (SO <sub>4</sub> ) <sub>3</sub>		٠.	a=8.80Å	Z=8			Hölzel,138.
- ZIPPEITE	(OH) <sub>10.</sub> 16H <sub>2</sub> O	-	<i>~</i>	b=68.43Å c=14.55Å				
CREEDITE	Ca <sub>3</sub> Al <sub>2</sub> SO <sub>4</sub> (OH) <sub>2</sub> F <sub>8</sub>	(H <sub>2</sub> O) <sub>2</sub> {3∞}{Ca <sub>3</sub> <sup>[8]</sup> Al <sub>2</sub> °	Mon.	a=14.03Å	t°30'	Ca <sub>1</sub> (8f) Ca <sub>11</sub> (4e)		SR, 30A, 378; Pov., 657; Str. Tab.,
	2H <sub>2</sub> O		C2/c	b=8.51A c=9.93Å	Z=4	S(4e) Al(8f) F <sub>I-III</sub> (8f)		161;KKW,151.
CUPROSKLO-	Cu(UO <sub>2</sub> ),	(H,O),Cu <sup>[/by]</sup> H,	Tric.	a=7.052Å	α=109.23°	U(2i) Cu(1e)		Am.Min., 1975,60,448-453;Am.
DOWSKITE	(SiO <sub>3</sub> OH) <sub>2</sub> .6H <sub>2</sub> O	{2\infty}\(\(\mathbb{O}_2\)_2\(\mathbb{S}_1\)_2\(\mathbb{O}_2\)_2\	<u>Б</u>	b=9.267Å	β=89.84°	Si(Zi) O <sub>l-IX</sub> (Zi)		Min., 1981, 66, 610-625; SR, 41A,
				c=6.655Å	γ=110.01°			380-381;Pov.,455;SR, <u>28,277-</u>
					Z=1			2/8;Str. I ab., 385; Holzel, 195.
DELHAYELITE	(Na,K) <sub>10</sub> Ca <sub>5</sub> Al <sub>6</sub> Si <sub>32</sub>	(H <sub>2</sub> O) <sub>18</sub> (Na,K) <sub>10</sub> [8]		a=6.53Å	Z=1			Min.Mag.,1959,32,6-9;Pov.,
		{3∞}[Ca₅ <sup>27</sup> Al <sub>6</sub> Si <sub>32</sub> O <sub>80</sub> Cl <sub>6</sub> ] (≈Macdonaldite)	Fmn2 <sub>1</sub>	c=7.04Å				434,3tf. I db.,468,RKW, 167, Hölzel,237.
DEWINDTITE		Pb <sub>2</sub> <sup>[8]</sup> (H <sub>2</sub> O) <sub>7</sub>	1	a=16.031Å	2=6			Eur.J.Min.,1990,2,399-405;
	(OH) <sub>3</sub> .7H <sub>2</sub> O	{200}[(U <sup>[7by/8by]</sup> O <sub>2</sub> )4		b=17.264Å				Pov.,559;Str.Tab.,355;RRW,
		(OH) <sub>3</sub> (P <sup>1</sup> O <sub>4</sub> ) <sub>3</sub> ]		c=13.605Å				170;Hölzel,181;Am.Min.,1954,
DIADOCHITE	Fe, (DO.)(SO.)(OH)	1_	Tric	2=0 61Å	~=0804Q'			Hölzel 169-BRW 171-K/B 176
	.5H;0		<u>و</u> :	b=9.77Å	B=108°1'			.02.61.02.02.61.02.02.61.02.61.02.61.02.61.02.61.02.61.02.61.02.61.02.61.02.61.02.02.61.02.61.02.02.61.02.02.61.02.02.02.02.02.02.02.02.02.02.02.02.02.
				c=7.36Å	y=63°59°			
					Z=2			
DONNAYITE - (Y)	NaSr <sub>3</sub> CaY(CO <sub>3</sub> ) <sub>6</sub>		Tric.	a=9.000Å	$\alpha = 102^{\circ}77$			Am.Min., 1979, 64, 653-654;
	.3H <sub>2</sub> O		<u>Т</u>	b=8.999Å	$\beta = 116^{\circ}28'$			Hölzel, 105; Can. Min., 1978, 16,
				c=6.793Å	γ=59°99' Z=1			335-340.
DUHAMELITE	Cu <sub>4</sub> Pb <sub>2</sub> Bi(VO <sub>4</sub> ) <sub>4</sub>		Orth.	a=7.49Å	Z=1			Min.Mag.,1981,44,151-152;
	(OH) <sub>3</sub> .8H <sub>2</sub> O		۷.	b=9.66Å		-		Am.Min., 1982, 67, 414 (Abs.);
				c=5.87Å				Min. Abs.,81-3236;Hölzel,177.
DUMONTITE	Pb <sub>2</sub> (UO <sub>2</sub> ) <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub>	Pb <sub>2</sub> (H <sub>2</sub> O) <sub>5</sub> {2∞}{(UO <sub>2</sub> ) <sub>3</sub>		a=8.16Å	ခံ	U <sub>1</sub> (2e) U <sub>11</sub> (4f)		SR,27,583-584;K/B,162;Bull.
	O <sub>2</sub> .5H <sub>2</sub> O	$O_2(P^{\bullet}O_4)_2$ ( $\approx$ Dewindtite)	P2 <sub>1</sub> /a	b=16.73A c=7.02Å	Z=2	PD(41) P(41)		Min., 1958, 81, 63-65; Am. Min., 1989, 74, 1403 (Abs.); Pov., 559.
EAKERITE	Ca <sub>2</sub> SnAl <sub>2</sub> Si <sub>6</sub> O <sub>18</sub>	Ca <sub>2</sub> <sup>181</sup> Sn <sup>161</sup> (H <sub>2</sub> O) <sub>2</sub>	Mon.	a=15.892Å	β=101.34°	Sn(2a) Ca(4e)		Am.Min., 1976, 61, 956-962; SR,
	(OH) <sub>2</sub> .2H <sub>2</sub> O	{2∞}[Al'Si <sub>3</sub> 'O <sub>9</sub> (OH)] <sub>2</sub>	P2,/m	b=7.721A c=7.438Å	Z=2	Al(4e) Si <sub>I-III</sub> (4e) O <sub>I-XI</sub> (4e)		42A,403-404;RRW,184;Hölzel, 207.
EPISTOLITE	Na <sub>5</sub> TiNb <sub>2</sub> (Si <sub>2</sub> O <sub>7</sub> ) <sub>2</sub>	(208	Tric.	a=5.41Å	α=103°3'			Pov.,454;Str.Tab.,395;RRW,
	(O,F) <sub>4</sub> .5H <sub>2</sub> O		Ъ.	b=7.08Å	β=96°3′			192;Hölzel,201;Am.Min.,1984,
				c=12.07Å	γ=88°36' Z=2			
FAUJASITE		Na <sub>20</sub> Ca <sub>12</sub> Mg <sub>8</sub> (H <sub>2</sub> O) <sub>235</sub>	Cub.	a=24.74Å	Z=1	(Si,Al)(192i)		Am.Min., 1964, 49, 967-704; SR,
	_	{300}[(Al <sub>60</sub> Si <sub>132</sub> ) <sup>†</sup> O <sub>384</sub> ]	Fd3m			(Na,Ca)(32e)		32A,484-488;Pov.,353;Str.
		(≈Sodalite,Zeolite)				O-Iv(96g)		Tab.,493;RRW,205;Hölzel,244.
	7				-	(S=0)(A-A)		

NAME	CHEMICAL	STRUCTURAL	SPACE	UNIT CELL DIMENSIONS	MENSIONS	EQUIVALENT	STRUCTURE TYPE	REFERENCES
	T	AJONADIA	Τ.	8 0, 0	00,000	20120		Am Min 4004 66 637/Abc ):
FERRARISITE	7	(H <sub>2</sub> O) <sub>9</sub> Ca <sub>4</sub> °	<u></u>	a=8.249A	α=106.16			Affi.Miff., 1801,00,037 (AUS.),
	(ASO <sub>4</sub> ) <sub>2</sub> .9H <sub>2</sub> O	{2\infty}[Ca''\As\^O\4(OH)\2]		b=6.722Å	β=92.94°			SR,46A,337-338;Hölzel,166.
				c=11.198Å	γ=99.20°			
					Z=1			
FERRIERITE	KNa <sub>3</sub> Mg(Al <sub>5</sub> Si <sub>31</sub> )	KNa <sub>3</sub> Mg <sup>o</sup> (H <sub>2</sub> O) <sub>18</sub>	Mon.	a=18.886Å	β=90.0°	(AI,SI) <sub>I-V</sub> (4e)		Am.Min., 1985, 70,619-623; Zeit.
(monoclinic)	O <sub>72</sub> .18H <sub>2</sub> O	{3∞}[(Al₅Si₃₁)¹O <sub>72</sub> ]	P2 <sub>1</sub> /n	b=14.182A	Z=1			Krist., 1987, 178, 249-256; Pov.,
		(≈Mordenite,Zeolite)		c=7.470A				355;Str. I ab., 488;RKW, 209.
FURONGITE	Al <sub>13</sub> (UO <sub>2</sub> ) <sub>7</sub> (PO <sub>4</sub> ) <sub>13</sub>		Tric.	a=19.271Å	$\alpha = 67.62^{\circ}$			Am.Min.,1988,73,198(Abs.);
	(OH) <sub>14</sub> .58H <sub>2</sub> O		<u>.</u>	b=14.173Å	B=115.45°			K/B,162;Acta Cryst.,1981, <u>A37</u> ,
				c=12.136Å	γ=94.58°			C-186, (Abs.); Hölzel, 183; K/B,
					Z=1			102.
GEIGERITE	Mn <sub>5</sub> (AsO <sub>4</sub> ) <sub>2</sub>	Mn₅°As₄¹	Tric.	a=7.944Å	α=80.97°	As <sub>I-II</sub> (2i) Mn <sub>I</sub> (1a)		Am.Min., 1989, 74, 676-684;
	(AsO <sub>3</sub> OH) <sub>2</sub> .10H <sub>2</sub>	[O <sub>14</sub> (OH) <sub>2</sub> (H <sub>2</sub> O) <sub>10</sub> ]	<u>Т</u>	b=10.691Å	β=84.20°	Mn <sub>II-III</sub> (2i)		Hölzel, 162.
	0	(≈Chudobaite)		c=6.770Å	γ=81.85° 7=1			
CDIMEE! ITE	V Novi IO VOO		Po	2=0 30₺	7=2			Am Min 1973 58 139(Abs.):
GRIMSELIE	- Nama (002)(003)3 - H2O		P 62c	c=8.26Å	7 7			RRW,248;Hölzel,109.
GRISCHUNITE	NaCa <sub>2</sub> Mn <sub>5</sub> Fe	1	Orth.	a=12.855Å	Z=4	Na(4a) Ca(8c)		Am.Min.,1987,72,1225-1229;
	(AsO <sub>4</sub> ) <sub>6</sub> .2H <sub>2</sub> O	Mn <sub>5</sub> °Fe°As <sub>6</sub> O <sub>24</sub> ]	Pcab	b=13.487Å		As <sub>i-III</sub> (8c)		Am.Min., 1986, 71, 227-228
				c=12.04/A				(Abs.);Holzel,164.
GUERINITE		(H <sub>2</sub> O) <sub>9</sub> Ca <sub>4</sub> °		a=17.62Å	β=90.6°	Ca <sub>I-VI</sub> (4e)		Acta Cryst.,1974, <u>B30</u> ,1789-
	(AsO <sub>4</sub> ) <sub>2</sub> .9H <sub>2</sub> O	{2\infty}[Ca <sup>[7]</sup> As <sub>4</sub> 'O <sub>14</sub> (OH) <sub>2</sub> ]	P2 <sub>1</sub> /n	b=6.734Å	Z=2	As <sub>I-V</sub> (4e) O <sub>I-VV</sub> (4e)		1794;Hölzel,166.
OI III I EMINITE	(000/ (01//00		4	2-7 084 8	7=2	Ba/2a) O.(2a)		Can Min 1995 33 1103-1109
GUILLEMINITE	Ba(UC <sub>2</sub> ) <sub>3</sub> (SeC <sub>3</sub> ) <sub>2</sub>	(H2O)3Ba:	E	8=7.004A	7=7	Da(za) Oi(za)		Am Min 1085, 50, 1103-1109,
	(OH)4-3H2O	{2∞}[U₃''''(Se''O₃)₂Oፄ] (≈Phosphiranviite)	P21nm	c=16,881Å		Oii(4b) 3e(4b)		Pov., 567; Str. Tab., 229.
GYROLITE	NaCa <sub>16</sub> AlSi <sub>24</sub> O <sub>60</sub>	(20)[Na°Ca16°(H2O)14]	1	a=9.74Å	α=95.7°	Cal-VII(2i) Sil-		Min.Mag.,1988,52,377-387;
	(OH), 14H,O	(200) Alisio On		b=9.74Å	B=91.5°	x <sub>II</sub> (2i)		RRW,253;Pov.,434;Str.Tab.,
		(≈Reyerite)		c=22.40Å	y=120.0°			467;Hölzel,236.
	1				1=7			A Mi- 4084 60 070 083.
HOTSONITE	Al <sub>11</sub> (SO <sub>4</sub> ) <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub>		Tric.	a=11.23A	α=112°32"			Am.Min., 1984, <u>69</u> , 979-983; K/B 176-Hölzel 124
	O2L01.12(LO)		<b>.</b>	D=11.00A	p=10/32			70, 170, 1020, 124.
				C=10.55A	γ=64-2/ Z=?			
нЙсепте	Pb <sub>2</sub> (UO <sub>2</sub> ) <sub>3</sub> (AsO <sub>4</sub> ) <sub>2</sub> (OH) <sub>4.3</sub> H <sub>2</sub> O		Mon.	خ	β=119°48'			Str.Tab.,356;Pov.,524;Hölzel, 182.
HURÉAULITE	Mn <sub>5</sub> (PO <sub>3</sub> OH) <sub>2</sub>	Mn <sub>5</sub> °P <sub>4</sub> <sup>t</sup>	Mon.	a=17.594Å	β=96.67°	Mn <sub>I</sub> (4e)		Am.Min., 1973, 58, 302-307; K/B,
	(PO <sub>4</sub> ) <sub>2</sub> .4H <sub>2</sub> O	[O <sub>14</sub> (OH) <sub>2</sub> (H <sub>2</sub> O) <sub>4</sub> ]	C2/c	b=9.086Å c=9.404Å	Z=4	Mn <sub>II-III</sub> (8f) P <sub>I-II</sub> (8f)		130-131;SR,39A,287;Pov.,547 -548;Str.Tab.,330;RRW,285.
						The state of the s		

\$17.41)O <sub>1.7</sub> \$18.20 \$1		Orth. Pnm2, 17 Tric. P1 PP P1	. •	Z=2 α=109.87°		Am.Min., 1987, <u>72</u> , 1024 (Abs.); Hölzel 237
(OH) <sub>2</sub> .6H <sub>2</sub> O (CU(UO <sub>2</sub> ) <sub>2</sub> (SO <sub>4</sub> ) <sub>2</sub> (OH) <sub>2</sub> .8H <sub>2</sub> O (OH) <sub>2</sub> .8H <sub>2</sub> O 2(H <sub>2</sub> O.OH) (K,Na) <sub>2</sub> Ba <sub>4</sub> Ti <sub>4</sub> Al <sub>2</sub> 2(H <sub>2</sub> O.OH) (K,Na) <sub>2</sub> Ba <sub>4</sub> Ti <sub>4</sub> Al <sub>2</sub> Si <sub>10</sub> O <sub>36</sub> .6H <sub>2</sub> O (OH) <sub>9</sub> .16H <sub>2</sub> O (OH) <sub>9</sub> .16H <sub>2</sub> O (CO <sub>3</sub> ).H <sub>2</sub> O			10	r=109.87°		Hölzel 237
Cu(UO <sub>2</sub> ) <sub>2</sub> (SO <sub>4</sub> ) <sub>2</sub> (OH) <sub>2</sub> ·8H <sub>2</sub> O (OH) <sub>2</sub> ·8H <sub>2</sub> O (CH <sub>2</sub> O <sub>4</sub> O <sub>2</sub> ) <sub>2</sub> (CH <sub>2</sub> O <sub>4</sub> O <sub>2</sub> ) <sub>3</sub> (K,Na) <sub>2</sub> Ba <sub>4</sub> Ti <sub>4</sub> Al <sub>2</sub> (CH) <sub>9</sub> ·16H <sub>2</sub> O (CH) <sub>9</sub> ·16H <sub>2</sub> O (CO <sub>3</sub> )·H <sub>2</sub> O				r=109.87°		
(CH) <sub>2</sub> -8H <sub>2</sub> O (K(Mn,Fe) <sub>2</sub> (Nb,Ta) O <sub>2</sub> (PO <sub>4</sub> ) <sub>2</sub> . 2(H <sub>2</sub> O <sub>2</sub> OH) (K,Na) <sub>2</sub> Ba <sub>4</sub> Ti <sub>4</sub> Al <sub>2</sub> Si <sub>10</sub> O <sub>36</sub> .6H <sub>2</sub> O Ca <sub>2</sub> Zn <sub>4</sub> Fe <sub>8</sub> (PO <sub>4</sub> ) <sub>9</sub> (OH) <sub>9</sub> .16H <sub>2</sub> O (OH) <sub>9</sub> .16H <sub>2</sub> O (CO <sub>3</sub> ).H <sub>2</sub> O						Min.Abs.,84M/3844;Hölzel,
K(Mn,Fe) <sub>2</sub> (Nb,Ta) O <sub>2</sub> (PO <sub>4</sub> ) <sub>2</sub> . 2(H <sub>2</sub> O <sub>.</sub> OH) (K,Na) <sub>2</sub> Ba <sub>4</sub> Ti <sub>4</sub> Al <sub>2</sub> Si <sub>10</sub> O <sub>36</sub> .6H <sub>2</sub> O Ca <sub>2</sub> Zn <sub>4</sub> Fe <sub>6</sub> (PO <sub>4</sub> ) <sub>9</sub> (OH) <sub>9</sub> .16H <sub>2</sub> O (CO <sub>3</sub> ).H <sub>2</sub> O HKMg <sub>2</sub> B <sub>12</sub> O <sub>16</sub> (OH) <sub>10</sub> .4H <sub>2</sub> O (CO <sub>3</sub> ).H <sub>2</sub> O (CA <sub>3</sub> Mg)(Mn,Zn) <sub>2</sub> Fe <sub>3</sub> (PO <sub>4</sub> ) <sub>4</sub> (OH) <sub>3</sub> .			1	β=112.01° γ=100.40°		Tab.,299;RRW,311.
Ca <sub>2</sub> Ch(O <sub>2</sub> ) <sub>2</sub> 2(H <sub>2</sub> O <sub>2</sub> OH) (K, Na) <sub>2</sub> Ba <sub>4</sub> Ti <sub>4</sub> Al <sub>2</sub> Si <sub>10</sub> O <sub>36</sub> .6H <sub>2</sub> O Ca <sub>2</sub> Zn <sub>4</sub> Fe <sub>8</sub> (PO <sub>4</sub> ) <sub>9</sub> (OH) <sub>9</sub> .16H <sub>2</sub> O (CO <sub>3</sub> ).H <sub>2</sub> O				7=2		Am Min 1987 72 223:Hölzel
(K,Na)-B471,4M2 S1:003e,6H2O Ca2Zn4Fes(P04)9 (OH)9-16H2O (CO3)-H2O HKMQ2B12O16 (OH)10-4H2O (OH)10-4H2O (CA3,MQ)(Mn,Zn)2 Fes(PO4,4(OH)3- Fes(PO4,4(OH)3-			b=10.023Å			144;K/B,158.
Si,0O <sub>3</sub> e.6H <sub>2</sub> O  Ca <sub>2</sub> Zn <sub>4</sub> Fe <sub>8</sub> (PO <sub>4</sub> ) <sub>9</sub> (OH) <sub>9</sub> .16H <sub>2</sub> O  (CO <sub>3</sub> ).H <sub>2</sub> O  HKMg <sub>2</sub> B <sub>12</sub> O <sub>16</sub> (OH) <sub>10</sub> .4H <sub>2</sub> O  14H <sub>2</sub> O  (Ca <sub>3</sub> Mg)(Mn,Zn) <sub>2</sub> Fe <sub>3</sub> (PO <sub>4</sub> A(OH) <sub>3</sub> .			1	Z=8 ?		Encyc.Miner.Nam.,149;Hölzel,
(Ca, Mg) (Mn, Zn) 2 (CA) (CA) (CA) (CA) (CA) (CA) (CA) (CA)			b=25.904Å c=10.608Å			205;Min.Record,1977,8,453-456.
(OH) <sub>9</sub> . 16H <sub>2</sub> O (CO <sub>3</sub> ). H <sub>2</sub> O (CO <sub>3</sub> ). H <sub>2</sub> O HKMg <sub>2</sub> B <sub>12</sub> O <sub>16</sub> (OH) <sub>10</sub> . 4H <sub>2</sub> O (OH) <sub>10</sub> . 4H <sub>2</sub> O 14H <sub>2</sub> O (Ca.Mg)(Mn.Zn) <sub>2</sub> Fe <sub>3</sub> (PO <sub>4</sub> A(OH) <sub>3</sub> .				Z=2		Am.Min., 1980, 65, 1067 (Abs.);
(Y) Ca <sub>2</sub> (Y,Ce) <sub>2</sub> (SiO <sub>3</sub> ) <sub>4</sub> (CO <sub>3</sub> ).H <sub>2</sub> O HKMg <sub>2</sub> B <sub>12</sub> O <sub>16</sub> (OH) <sub>10</sub> .4H <sub>2</sub> O (OH) <sub>10</sub> .4H <sub>2</sub> O 14H <sub>2</sub> O (Ca <sub>1</sub> Mg)(Mn,Zn) <sub>2</sub> Fe <sub>3</sub> (PO <sub>4</sub> <sub>4</sub> (OH) <sub>3</sub> .		:	b=20.37Å c=9.95Å			Hölzel,176;K/B,161.
(CC <sub>3</sub> ). r <sub>2</sub> C <sub>1</sub> HKMg <sub>2</sub> B <sub>12</sub> O <sub>16</sub> (OH) <sub>10</sub> .4H <sub>2</sub> O 14H <sub>2</sub> O (Ca <sub>3</sub> Mg)(Mn,Zn) <sub>2</sub> Fe <sub>3</sub> (PO <sub>4</sub> A(OH) <sub>3</sub> .	-	Orth.	a=12.93Å	Z=4	Ca(8d) Si <sub>I-II</sub> (8d)	Sov. Phys. Cryst., 1967, 11, 485-
HKMg2B <sub>12</sub> O <sub>16</sub> (OH) <sub>10</sub> .4H <sub>2</sub> O -(Y) Y <sub>2</sub> O <sub>4</sub> (UO <sub>2</sub> ) <sub>4</sub> (CO <sub>3</sub> ) <sub>3</sub> . 14H <sub>2</sub> O (Ca.Mg)(Mn,Zn) <sub>2</sub> Fe <sub>3</sub> (PO <sub>4</sub> ) <sub>4</sub> (OH) <sub>3</sub> .	7		c=6.73Å		C(4c)	Str. Tab., 405; Can. Min., 1964, 8, 1-10
(OH) <sub>10</sub> .4H <sub>2</sub> O TTE – (Y) Y <sub>2</sub> O <sub>4</sub> (UO <sub>2</sub> ) <sub>4</sub> (CO <sub>3</sub> ) <sub>3</sub> . 14H <sub>2</sub> O (Ca,Mg)(Mn,Zn) <sub>2</sub> Fe <sub>3</sub> (PO <sub>4</sub> ) <sub>4</sub> (OH) <sub>3</sub> .	(H <sub>2</sub> O) <sub>4</sub> (3∞){ K <sup>[8]</sup> Mg <sub>2</sub> ° N	Mon.	×	0.13	B <sub>1-V1</sub> (8f) O <sub>1-V111</sub> (8f)	SR,31A,172-173;Pov.,485-
TE - (Y)			b=8.43Å c=14.665Å	Z=4	K(4e) Mg(8f)	486;Str.1ab.,262;KKW,316; Am.Min.,1965, <u>50</u> ,1079-1083.
	2	Mon.		β=115.3°		Bull.Min., 1986, 109, 643-647;
	<b>u.</b>		b=12.93A c=12.39Å	Z=4		Am.Min., 1988, (3, 191 (Abs.); Hölzel, 110.
	2			8=110°30'		Am.Min., 1979, 64, 1330-1331
2H <sub>2</sub> O	<u>.                                    </u>		b=7.19Å c=19.74Å	Z=2		(Abs.); K/B,156,Hölzel,177.
KINGSMOUNTITE (Ca,Mn) <sub>4</sub> FeAl <sub>4</sub>	2 (	Mon.	-	β=91.16°		Can.Min., 1979, 17,579-582;
(PO <sub>4</sub> ) <sub>6</sub> (OH) <sub>4</sub> .12H <sub>2</sub> O			b=24.46A c=6.258Å	Z=2		K/B,153;H0lZel,176.
		Tric.		$\alpha = 70^{\circ}29'$		Min.Mag., 1989, 53, 385-386;
(OH) <sub>4</sub> .4H <sub>2</sub> O	[O <sub>16</sub> (OH) <sub>4</sub> (H <sub>2</sub> O) <sub>4</sub> ] ? (≈Hotsonite)		b=13.519Å   c=7.500Å	$\beta$ =117°52' $\gamma$ =136°34'		Pov.,744,549;Str.Tab.,543; RRW, 333;Hölzel,169.
1		1	2-7 27 K	7-7		Am Min 1975 60 487(Abs.):
-(Ce) 5H <sub>2</sub> O 1527-022.	<u> </u>	Pmmm Pmmm	∞ <b>4</b> ∞4	<b>4-7</b>		Hölzel, 224.
LAVENDULAN NaCaCu <sub>5</sub> (AsO <sub>4</sub> ) <sub>4</sub>		Orth.		Z=8		Pov.,518;Str.Tab.,349M;RRW,
GI.5H <sub>2</sub> O			b=41.0A c=9.85Å			347;Hölzel,174.

NAME	CHEMICAL FORMULA	STRUCTURAL FORMULA	SPACE	UNIT CELL DIMENSIONS	MENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
LEIFITE	Na <sub>6</sub> Be <sub>2</sub> Al <sub>2</sub> Si <sub>16</sub> O <sub>39</sub> (OH) <sub>2</sub> .1.5H <sub>2</sub> O	Na <sub>6</sub> <sup>17</sup> (OH) <sub>2</sub> (H <sub>2</sub> O) <sub>1.5</sub> {3∞}{Be <sub>2</sub> Si <sub>16</sub> Al <sub>2</sub> O <sub>39</sub> ]	Trig. P 3m1	a=14.352Å c=4.852Å	Z=1	Na(6i) Be(2d) Si <sub>1</sub> (6h) Si <sub>11</sub> (6g) Si <sub>111</sub> (6i)		Acta Cryst.,1974, <u>B30</u> ,396-401; SR, <u>40A,</u> 285;Pov.,350;Str.Tab., 483;RRW,350-351.
LOUDOUNITE	NaCa <sub>5</sub> Zr <sub>4</sub> Si <sub>16</sub> O <sub>40</sub> (OH) <sub>11</sub> .8H <sub>2</sub> O		~ ~	ċ				Can.Min.,1983, <u>21,</u> 37-40; Hölzel,230;Am.Min.,1983, <u>68,</u> 1039(Abs.).
LUN'OKITE	(Mg,Fe)(Mn,Ca)Al (PO <sub>4)2</sub> (OH).4H <sub>2</sub> O	(Mg,Fe)°(Mn,Ca)°Al° P <sub>2</sub> '[O <sub>8</sub> (OH)(H <sub>2</sub> O) <sub>4</sub> ] (=Segelerite)	Orth. Pbca	a=14.95Å b=18.71Å c=6.96Å	2=8			Am.Min.,1984,69,210-211 (Abs.);K/B,153;Hölzel,176.
MAGNESIUM- ZIPPEITE	Mg(UO <sub>2</sub> ) <sub>6</sub> (SO <sub>4</sub> ) <sub>3</sub> (OH) <sub>10</sub> .16H <sub>2</sub> O		٠	a=8.80Å b=68.43Å c=14.55Å	Z=8			Hölzel,138.
MARTHOZITE	Cu(UO <sub>2</sub> ) <sub>3</sub> (SeO <sub>3</sub> ) <sub>3</sub> (OH) <sub>2</sub> .7H <sub>2</sub> O		Orth. Pnma	a=16.40Å b=17.20Å c=6.98Å	Z=4			Bull. Min., 1969, <u>92</u> , 278-283; Am. Min., 1970, <u>55</u> , 533 (Abs.); Hölzel, 94; RRW, 384; Pov., 567.
MCKELVEYITE – (Y)	NaBa <sub>3</sub> (Ca,U)Y (CO <sub>3)6</sub> .3H <sub>2</sub> O		Tric. P 3	a=9.174Å c=19.154Å	Z=3			Am.Min., 1965, <u>50</u> , 593-612; Pov., 618; Str. Tab., 246; Hölzel, 105; RRW, 388, 370-371.
METAVANMEER- SSCHEITE	U(UO <sub>2</sub> ) <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>6</sub> .2H <sub>2</sub> O		Orth. Fddd	a=34.18Å b=33.88Å c=14.074Å	Z=32			Hölzel,181;Am.Min.,1982, <u>67,</u> 1077(Abs.).
METAVANURALI- TE	AI(UO <sub>2</sub> ) <sub>2</sub> (VO <sub>4</sub> ) <sub>2</sub> (OH).8H <sub>2</sub> O		Tr <u>i</u> c. P 1	a=10.46Å b=8.44Å c=10.43Å	$\alpha$ =75°53' $\beta$ =102°50' $\gamma$ =90° Z=2			Bull.Min.,1970, <u>93</u> ,242-248,Am. Min.,1971, <u>56</u> ,637(Abs.); Hölzel,183;Pov.,503;RRW,402.
METAVOLTINE	K₂Na <sub>6</sub> Fe <sub>7</sub> O₂ (SO₄)₁₂.18H₂O	(H <sub>2</sub> O) <sub>16</sub> {3∞}[K <sub>2</sub> <sup>[9]</sup> Na <sub>6</sub> ° Fe <sub>7</sub> °S <sub>12</sub> ˙O <sub>50</sub> ]	Trig. P3	a=9.575Å c=18.17Å	Z=1			SR. <u>42A</u> ,374;Min.Abs.,77/4074; Min.Mag.,1977, <u>41</u> ,371-374; Pov.,600;Str.Tab.,297;RRW, 403.
MILLISITE	(Na,K)CaAl <sub>6</sub> (PO <sub>4</sub> ) <sub>4</sub> (OH) <sub>9</sub> .3H <sub>2</sub> O		Tet. P4 <sub>1212</sub> ?	a=7.00Å c=19.07Å	Z=4 ?			Am.Min., 1960, 45, 547-561; Str. Tab., 347; K/B, 153; Pov., 551.
MOLURANITE	H₄U(UO <sub>2</sub> )₃(MoO₄)7. 18H₂O		Amorpn.	•				Hölzel, 141.
MONTGOMERYI. TE	Са4МgAl4(PO4) <sub>6</sub> (OH) <sub>4</sub> .12H <sub>2</sub> O	(H <sub>2</sub> O) <sub>12</sub> Ca <sub>4</sub> <sup>[8]</sup> {1∞}[Mg <sup>°</sup> Al <sub>4</sub> <sup>°</sup> P <sub>6</sub> <sup>t</sup> O <sub>24</sub> (OH) <sub>4</sub> ] (=Calcioferrite)	Mon. C2/c	a=10.023Å b=24.121Å c=6.243Å	β=91.55° Z=2	Cai(4e) Alı(4c) Alıı(4c) Pı(4e) Pıı(8f)		Am.Min., 1974, <u>59</u> , 843-850; Am. Min., 1976, <u>61</u> , 12-14; Pov., 550; Str. Tab., 347; K/B, 74-75; SR, <u>40A, 2</u> 43.
	O <sub>z</sub>	K <sub>2.8</sub> Na₁ <sub>5</sub> Ca₂(H₂O)₂₀ {₃∞}[Al₅¹Si₃⁵Óℊ₀] (Zeolite)	Orth. Cmc2 <sub>1</sub>	a=18.094Å b=20.516Å c=7.524Å	Z=1	(Al,Si) <sub>I-VI</sub> (8b) O <sub>I-VI</sub> (8b)		Zeit.Krist., 1986, <u>175,</u> 249-256; SR, <u>44A,</u> 311; Pov., 358; Str. Tab., 488; LF, 397; Hölzel, 245.
MOREAUITE	Al <sub>3</sub> (UO <sub>2</sub> )(PO <sub>4</sub> ) <sub>3</sub> (OH) <sub>2</sub> .13H <sub>2</sub> O		Mon. P2 <sub>1</sub> /c	a=23.41Å b=21.44Å c=18.34Å	β=92.0° Z=16			Am.Min., 1985, <u>70</u> , 1330-1331 (Abs.);K/B,162;Höizel,182.

NAME	CHEMICAL FORMULA	STRUCTURAL FORMULA	SPACE GROUP	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
MOTUKOREAITE	$(Mg_6Al_3(OH)_{18})$ $(Na_0e(SO_4,CO_3)_2)$ . $12H_2O$		Trig. R 3m	a=9.172Å c=33.51Å	Z=3	Al <sub>I</sub> (3b) Al <sub>II</sub> (6c) Mg(18g) Na(3a) S(3c)		SR <u>,53A,</u> 182;Am.Min.,1987 <u>,72,</u> 1028(Abs.);Min.Mag.,1977, <u>41,</u> 389-390;Hölzel,134.
MUNDITE	AI(UO <sub>2</sub> ) <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>3.</sub> 5.5H <sub>2</sub> O		Orth. P2 <sub>1</sub> cn	a=17.08Å b=30.98Å c=13.76Å	Z=16			Am.Min.,1982 <u>,67,</u> 624(Abs.); K/B,162;Hölzel,181.
NAKAURIITE	Cu <sub>6</sub> (SO <sub>4</sub> ) <sub>4</sub> (CO <sub>3</sub> ) (OH) <sub>6</sub> .48H <sub>2</sub> O		Orth.	a=14.585Å b=11.47Å c=16.22Å	Z=2			Am.Min.,1977, <u>62,</u> 594(Abs.); Hölzel,135.
NICKEL-ZIPPEITE	Ni <sub>2</sub> (UO <sub>2</sub> ) <sub>6</sub> (SO <sub>4</sub> ) <sub>3</sub> (OH) <sub>10</sub> .16H <sub>2</sub> O		?	a=8.80Å b=68.43Å c=14.55Å	Z=8			Hölzel,138.
NOSEAN	Na <sub>8</sub> (Si <sub>6</sub> Al <sub>6</sub> )O <sub>24</sub> (SO <sub>4</sub> ).H <sub>2</sub> O	Na₅S¹O₄(H₂O) {3∞}[Sie¹Ale¹O₂₄] (≈Sodalite)	Cub. P <del>4</del> 3n	a=9.05Å	Z=1	Al(6d) Si(6e) 0.49S (2a)		Can.Min., 1989, <u>27,</u> 165-172; RRW, 443; Hölzel, 241; Pov., 350; Str. Tab., 483; SR, <u>30A,</u> 432.
OBOYERITE	H <sub>6</sub> Pb <sub>6</sub> (TeO <sub>3</sub> ) <sub>3</sub> (TeO <sub>6)2</sub> .2H <sub>2</sub> O		Tric. P 1	a=12.249Å $\alpha$ =116.45' b=15.113Å $\beta$ =98.58° c=6.868Å Z=2 $\gamma$ =85.82°	$\alpha$ =116.45° $\beta$ =98.58° =2 $\gamma$ =85.82°			Am.Min.,1981, <u>66,</u> 220(Abs.); Min.Mag.,1979, <u>43</u> ,453-457; Hölzel,94.
OFFRÉTITE	KCaMg(Al <sub>5</sub> Si <sub>13</sub> )O <sub>36</sub> . 15H <sub>2</sub> O	KCaMg(Al <sub>5</sub> Si <sub>13</sub> )O <sub>36-</sub>   K <sup>l9l</sup> Ca <sup>l9l</sup> Mg <sup>1</sup> (H <sub>2</sub> O) <sub>15</sub>  3∞}[Al <sub>5</sub> Ci <sub>13</sub> O <sub>36</sub> ]  Zeolite 	Hex. P ēm2	a=13.291Å c=7.582Å	Z=1	Mg(1c) K(1b) Ca <sub>1</sub> (2i) Ca <sub>11</sub> (2g) (v.occ.)Si <sub>1</sub> (12o) Si <sub>11</sub> (6m)		Acta Cryst., 1972, <u>B28,</u> 825-834; Pov., 358; Str. Tab., 492; RRW, 445; Hölzel, 244; Am. Min., 1976, 61,853-863; Sr, 42A, 454.
OLMSTEADITE		(H <sub>2</sub> O) <sub>2</sub> K <sup>[8]</sup> (3∞}[Fe <sub>2</sub> ° (Nb,Ta)°P <sub>2</sub> ¹O <sub>10</sub> ] (≈Montgomeryite)	Orth. Pb2₁m	a=7.512Å b=10.000Å c=6.492Å	Z=2	K(2b) Na(2a) Fe(4c) P <sub>i</sub> (2b) P <sub>ii</sub> (2a)		Am.Min.,1976 <u>,61,5</u> -11;K/B,31- 32;SR, <u>42A,</u> 343-344.
OVERITE	CaMgAl(PO <sub>4)2</sub> (OH).4H <sub>2</sub> O	Ca²(H₂O)₄{2∞}[Mg²Al⁴ ( P₂¹O₅(OH)] (≈Segelerite)	Orth. Pbca	a=14.723Å b=18.746Å c=7.107Å	Z=8	Mg(8c) P <sub>I-II</sub> (8c) Ca(8c) AI(8c) 		Am.Min.,1977, <u>62,</u> 692-702;Am. Min.,1974, <u>59</u> ,48-59;SR, <u>43A,</u> 252;Pov.,550;Str.Tab.,347.
PARNAUITE	Cu <sub>9</sub> (AsO <sub>4</sub> ) <sub>2</sub> (SO <sub>4</sub> ) (OH) <sub>10</sub> .7H <sub>2</sub> O		Orth. P2 <sub>1</sub> 22	a=14.98Å b=14.223Å c=6.018Å	Z=2			Am.Min.,1978 <u>,63</u> ,704-708; Hölzel,168;Encyc.Miner.Nam., 232.
PERETAITE	CaSb <sub>4</sub> O <sub>4</sub> (SO <sub>4</sub> ) <sub>2</sub> (OH) <sub>2</sub> .2H <sub>2</sub> O	{2∞}{Sb <sub>1</sub> <sup>(5by)</sup> Sb <sub>2</sub> <sup>(0</sup> 4   1 (OH) <sub>2</sub> {1∞}{Ca <sup>8ap</sup> S <sub>2</sub> <sup>(</sup> 0 <sub>8</sub> ( (H <sub>2</sub> O) <sub>2</sub> ]	Mon. C2/c	a=24.665Å b=5.6006Å c=10.185Å	β=95.98° Z=4	Sb <sub>-II</sub> (8f) Ca(4e) S(8f)		Am.Min.,1980, <u>65,</u> 940-946,936- 939;Hölzel,123;Zeit.Krist., 1998, <u>213,</u> 141-150.
	Q		Hex. P6/mmm	a=18.49Å c=7.51Å	Z=1			Am.Min.,1985, <u>70</u> ,1331(Abs.); Hölzel,244.
	KCuFe <sub>15</sub> (PO <sub>4</sub> ) <sub>12</sub> (OH) <sub>12</sub> .12H <sub>2</sub> O		Orth. Pbmn	a=14.40Å b=18.76Å c=10.40Å	<b>Z=</b> 2			Am.Min.,1984 <u>,69</u> ,1192(Abs.); Hölzel,181.
PHOSPHURANY- LITE	Ca(UO <sub>2</sub> ) <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>2</sub> .6H <sub>2</sub> O	Ca(H <sub>2</sub> O) <sub>e(</sub> 2∞){(UO <sub>2</sub> ) <sub>3</sub> (OH) <sub>2</sub> (PO <sub>4</sub> ) <sub>2</sub> ] (≈Dumontite)	Orth. Cmcm	a=15.778Å b=13.702Å c=17.253Å	Z=8 ?	U <sub>1</sub> (16h)U <sub>11</sub> (8g) U <sub>111</sub> (4b) Ca(f) P(16h)		Acta Cryst.,1991, <u>B47</u> ,439-446; Str.Tab.,355;RRW,478;Pov., 559,K/B,162,Hölzel,181;Eur.J. Min.,1991,3,69-77.

NAME	CHEMICAL	STRUCTURAL FORMULA	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
PHURALUMITE	2	Al <sub>2</sub> (OH) <sub>4</sub> (H <sub>2</sub> O) <sub>10</sub> {2∞}[(P'O <sub>4</sub> ) <sub>2</sub> (UO <sub>2</sub> ) <sub>3</sub> (OH) <sub>2</sub> ]	Mon. P2₁/a	a=13.836Å b=20.918Å c=9.428Å	β=112.44° Z=4	U <sub>I-III</sub> (4e) Al <sub>I-II</sub> (4e) P <sub>I-II</sub> (4e)		Acta Cryst.,1979, <u>B35,</u> 1880- 1882;Am.Min.,1980, <u>65,</u> 208 (Abs.);SR <u>,45A</u> ,313;K/B,161; Hölzel,182.
PHURCALITE	Ca <sub>2</sub> (UO <sub>2</sub> ) <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>4</sub> .4H <sub>2</sub> O	Ca <sub>2</sub> <sup>1/1</sup> (OH) <sub>2</sub> (H <sub>2</sub> O) <sub>4</sub> {2∞}{(P'O <sub>4</sub> ) <sub>2</sub> (UO <sub>2</sub> ) <sub>3</sub> (OH) <sub>2</sub> ] (≈Phuralumite)	Orth. Pbca	a=17.426Å b=16.062Å c=13.592Å	Z=8	Ca <sub>I-II</sub> (8c) P <sub>I-II</sub> (8c) U <sub>I-III</sub> (8c)		Acta Cryst.,1979, <u>B34,</u> 1677- 1679;Am.Min.,1979, <u>64,</u> 243; Am.Min.,1978, <u>63,</u> 1283(Abs.); Can.Min.,1991, <u>29,</u> 95-105;SR, 44A,255.
PSEUDOBOLÉITE	28PbCl <sub>2</sub> .2AgCl. 24Cu(OH) <sub>2</sub> .14H <sub>2</sub> O (?)		Tet. I 4/mmm	a=15.4Å c=31.2Å	Z=2			Encyc.Miner.Nam.,246;Pov., 649-650;Str.Tab.,166;RRW, 494; Hölzel,57.
p-VEATCHITE	(Sr,Ca) <sub>2</sub> (B <sub>5</sub> O <sub>6</sub> (OH)) <sub>2</sub> )B (OH) <sub>3</sub> .H <sub>2</sub> O	(Sr,Ca) <sub>2</sub> <sup>170471</sup> B(H <sub>2</sub> O) (OH) <sub>3</sub> {2∞}{B <sub>2</sub> <sup>1</sup> B <sub>3</sub> <sup>1</sup> O <sub>8</sub> (OH)] <sub>2</sub>	Mon. P2 <sub>1</sub>	a=6.70Å b=20.80Å c=6.60Å	β=119°15' Z=4	Sri(4f) Sr <sub>ii</sub> (4f) B <sub>i-Xi</sub> (4f)		Sov.Phys.Cryst.,1971, <u>16,</u> 75- 81;SR <u>,37A,</u> 274;Am.Min.,1960, <u>45,</u> 1221-1229;Pov.,489.
RANKACHITE	(WO <sub>4</sub> ) <sub>8</sub> .		Orth. Pmmm	a=8.17Å b=42.02Å c=5.45Å	Z=2			Am.Min.,1985, <u>70,</u> 876(Abs.); Hölzel,81.
RENARDITE	Pb(UO <sub>2</sub> ) <sub>4</sub> (PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>4</sub> .7H <sub>2</sub> O		Orth. Bmmb	a=16.01Å b=17.5Å c=13.7Å	Z=6			RRW,514;Pov.,559;Str.Tab., 355;K/B,162;Hölzel,181.
REYERITE	(Na,K)₂Ca₁₄Al₂Si₂₂ O₅(OH)₀.6H₂O	(Na,K) <sub>2</sub> Ca <sub>14</sub> (OH) <sub>8</sub> (H <sub>2</sub> O) <sub>8</sub> {2∞}{Si <sub>14</sub> Al <sub>2</sub> O <sub>38</sub> ] {2∞}{Si <sub>2</sub> O <sub>20</sub>	П <u>тіў</u> Р 3	a=9.765Å c=19.067Å	Z=1	Ca <sub>l</sub> (2d) Ca <sub>lt-ll</sub> (6g) Si <sub>t-ll</sub> (2d) Si <sub>ll-V</sub> (6g)		Min.Mag.,1988, <u>52,</u> 247-256; Am.Min.,1973, <u>58,</u> 517-522; Pov.,434-435;Str.Tab.,467; RRW,515.
SABUGALITE	HAI(UO <sub>2</sub> )4(PO <sub>4</sub> )4. 16H <sub>2</sub> O	(H <sub>2</sub> O) <sub>16</sub> [HAl{2∞}[UO <sub>2</sub> P <sup>1</sup> O <sub>4</sub> ]4] (≈Autunite)	Mon. I 4/mmm	a=6.96Å c=19.3Å				RRW,531;Pov.,556;Str.Tab., 351;K/B,162;Am.Min.,1951, <u>36,</u> 671-679.
SAINFELDITE	Ca <sub>5</sub> (AsO <sub>4</sub> ) <sub>2</sub> (AsO <sub>3</sub> OH) <sub>2</sub> .4H <sub>2</sub> O	Cas <sup>°</sup> As <sub>4</sub> <sup>†</sup> [O <sub>14</sub> (OH) <sub>2</sub> (H <sub>2</sub> O) <sub>4</sub> ]	Mon. C2/c	a=18.781Å b=9.820Å c=10.191Å	β=97°1' Z=4	Asııı(8f) Caı(4e) Caııııı(8f)		Bull.Min.,1972, <u>95</u> ,33-41;Am. Min.,1965, <u>50</u> ,806(Abs.);SR, <u>38A</u> ,326;Pov.,520;Str.Tab., 330;RRW,532.
SAKHAITE	Ca <sub>3</sub> Mg(BO <sub>3)2</sub> (CO <sub>3</sub> ). nH <sub>2</sub> O		Cub. Fd3m	a=14.749Å	Z=16			Min.Mag.,1990, <u>54,</u> 105-108; Min.Abs.,81-1239;Am.Min., 1966 <u>,51,</u> 1817(Abs.);Pov.,471.
SAMPLEITE	NaCaCu₅(PO₄)₄Cl. 5H₂O		Orth. 2/m	a=9.70Å b=38.40Å c=9.65Å	Z=8			RRW,535;Pov.,551;Str.Tab., 349;K/B,161;Min.Mag.,1978, 42,369-371;Hölzel,174.
SANJUANITE	Al <sub>2</sub> (PO <sub>4</sub> )(SO <sub>4</sub> )(OH). 9H <sub>2</sub> O		7 Tric.	a=11.314Å b=90.18Å c=7.376Å	$\alpha = ?$ $\beta = 95^{\circ}46'$ $\gamma = 105^{\circ}39'$ Z = 2			Min.Mag.,1989, <u>53</u> ,385-386; Pov.,562;Str.Tab.,572;Hőlzel, 169;Am.Min.,1968 <u>,53,</u> 1-8.

Mon.   Pairo	NAME	CHEMICAL	STRUCTURAL FORMIII A	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT	STRUCTURE TYPE	REFERENCES
CPH SHAO	SARMIENTITE	Fe <sub>2</sub> (AsO <sub>4</sub> )(SO <sub>4</sub> )		Mon.	a=6.55Å	B=97°39'			Am.Min., 1968, 53, 2077-2082;
The control of the		(OH).5H <sub>2</sub> O		P2,/c	b=18.55Å	Z=4			RRW,538-539;Pov.,517;Str. Tab.,342:Hölzel,169.
Table	SATIMO! ITE	O (O d) IV SINA		Ę	a=12.62&	7=4			Am Min. 1970.55.1069(Abs.):
Fe   ZnMnFes/POJ)	SALIMOLIE	13H <sub>2</sub> O		-> di	b=18.64Å c=6.97Å				RRW,540;Pov.,487-488.
COH); 9H; O   Fe; P <sub>3</sub> O <sub>12</sub> (OH) <sub>2</sub>     Finado   Fe <sub>3</sub> CasAA   Fe <sub>3</sub> (4d)     E - CuPb   Fe <sub>3</sub> CasAA   Fe <sub>3</sub>	SCHOONERITE	ZnMnFe <sub>3</sub> (PO <sub>4</sub> ) <sub>3</sub>	(H <sub>2</sub> Q) <sub>9</sub> Zn <sup>[5]</sup> {2∞}[Mn°	orth.	a=11.119Å		Zn(4d) Mn(4d)		Am.Min.,1977, <u>62</u> ,250-255,246-
E - Cupb (Nd. dd. Sm.)		OH) <sub>2</sub> .9H <sub>2</sub> O	Fe <sub>3</sub> P <sub>3</sub> O <sub>12</sub> (OH) <sub>2</sub> ]	Pmab	D=25.546A c=6.437Å		Fe <sub>III</sub> (4c)		Hölzel, 170.
(Nut Gd, Sm. Y) (Coo <sub>23</sub> (OH) (OH) <sub>2</sub> 4H <sub>2</sub> O (Coh <sub>3</sub> (Coh <sub>3</sub> ) (OH) <sub>2</sub> 4H <sub>2</sub> O (Ch) <sub>3</sub> 4H <sub>2</sub> O (Ch) <sub>3</sub> 4H <sub>2</sub> O (Ch) <sub>3</sub> 4H <sub>2</sub> O (Ch) <sub>4</sub> 4H <sub>2</sub> O (Ch) <sub>6</sub> 4CO <sub>3</sub> O (Ch) <sub>6</sub> 4CO (Ch) <sub>6</sub> 4CO (Ch) <sub>6</sub> 4CO <sub>3</sub> O (Ch) <sub>6</sub> 4CO (Ch)	SCHUILINGITE -	CuPb		Orth.	a=7.418Å	Z=4			Encyc.Miner.Nam.,270;Hölzel,
CaMgFe(PO <sub>4</sub> ) <sub>2</sub> Ca <sup>2</sup> (H <sub>2</sub> O) <sub>3</sub> (2∞)HMg°         Orth.         a=14.826A Z=8         Ca(8c) Mg(8c)           (OH),4H <sub>2</sub> O         Fe <sup>2</sup> P <sub>2</sub> O <sub>6</sub> (OH)I         PCa         Ca(10-2) <sub>2</sub> (VO <sub>4</sub> )         PCa         PCa           (OH) <sub>2</sub> .6H <sub>2</sub> O         Cu <sub>2</sub> (OH) <sub>2</sub> (H <sub>2</sub> O)         Mon.         a=10.599A β=103.42°         PCa           (OH) <sub>2</sub> .6H <sub>2</sub> O         Ca(10-2) <sub>2</sub> (CO <sub>3</sub> ) <sub>5</sub> Orth.         a=21.99A Z=2         PCa           (OH) <sub>4</sub> .6H <sub>2</sub> O         Ca(10-2) <sub>2</sub> (CO <sub>3</sub> ) <sub>5</sub> Orth.         a=21.99A Z=2         Aca           (OH) <sub>4</sub> .6H <sub>2</sub> O         (COH) <sub>2</sub> (H <sub>2</sub> O) <sub>3</sub> Tric.         a=9.590A α=108.04°         Al(11) All(10)           (OH) 6H <sub>2</sub> OH <sub>2</sub> O         (COH) <sub>2</sub> (H <sub>2</sub> O) <sub>3</sub> Trig.         a=12.20A ar=13.67A         Aca           (OH) <sub>2</sub> (SO <sub>3</sub> )         Cu <sub>2</sub> (H <sub>2</sub> O) <sub>3</sub> (H <sub>2</sub> O) <sub>3</sub> Trig.         a=12.20A ar=13.67A         Aca           (OH) <sub>1</sub> CI         Aca         Aca         Aca         Aca           (OH) <sub>2</sub> (SO <sub>3</sub> )         Aca         Aca         Aca           (OH) <sub>2</sub> (AH <sub>2</sub> O         Aca         Aca	(pn) -	(Nd,Gd,Sm,Y) (CO <sub>3</sub> ) <sub>3</sub> (OH) 1,5H <sub>2</sub> O		P2 <sub>1</sub> cn	b=18.87A c=6.385Å				107.
(OH), 4H₂O         FeP₂²O₂(OH)]         Pbca         b=18.751A         Fe(8c) P₁⋅⋅⋅(6c)           Cu₂(UO₂)₂(VO₄)₂ (U₂²(OH)₂(H₂O₃)²         Mon.         a=10.598A         β=103.42°        (6c)           Cu₂(UO₂)₂(VO₄)₂ (UO₂)₂√₂O₃          P₂₁/a         b=3633A         Z=2        (6c)           Ca(UO₂)₂(CO₃)₂         Ca(UO₂)₂(CO₃)₂         Orth.         a=21.99A         Z=2           Ca(UO₂)₂(CO₃)₂         7         b=15.83A         Z=2           (OH).6H₂O         (I₂∞)[Mn²(H₂O₃         Tric.         a=9.580A         A=[18.67]           (OH).6H₂O         (I₂∞)[Mn²(H₂O₃         Tric.         a=9.580A         A=[18.7]           (OH).6H₂O         (I₂∞)[Fe₃(So₂(H₂O)₃         Trig.         a=1.2.04         A=[1.67]           (OH).6H₂O         2∞][Fe₃(So₂(H₂O)₃         Trig.         a=12.204         A=[1.67]           (OH).6.33H₂O         2∞][Fe₃(So₂(D₃)₂         7         C=6.800A         Y=88           (OH).0.4H₂O         2∞][Fe₃(So₂(D₃)₂         7         C=14.55A         Z=2           (OH).0.4H₂O         P3c1         C=14.55A         Z=2           (Sh₂O)2(OH).0.C         P3c1         C=14.54A         Z=6           (Co+0,AlSO4)OH).0.C         P3c1         C=30.71A           HeU	SEGELERITE	CaMgFe(PO <sub>4</sub> ) <sub>2</sub>	Ca°(H₂O)₄{2∞}[Mg°	orth.	a=14.826Å		Ca(8c) Mg(8c)		Am.Min., 1977, 62, 692-702; Am.
Cu₂(UO₂)₂(VO₃)₂         Cu₂(UO₂)²(VO₃)₂         Cu₂(UO₂)²(VO₃)₂         Cu₂(UO₂)²(VO₃)₂         Cu₂(UO₂)²(VO₃)₂         Cu₂(UO₂)²(VO₃)₂         Cu₂(UO₂)²(VO₃)₂         Cu₂(UO₂)²(CO₃)₃         Cu²(UO₂)²(CO₃)₃         Cu²(UO₂)²(CO₃)₃         Cu²(UO₂)²(CO₃)₃         Cu²(UO₂)²(CO₃)₃         Cu²(UO₂)²(CO₃)₃         Cu²(UO₂)²(CO₃)₃         Cu²(UO₂)²(CO₃)₃         Tric.         a=21.804         Z=2         Al/(Th) All/(Te)           TE         MnAI(PO₃OH)₂         (2∞)[ Mn²(H₂O)₃         Tric.         a=9.5804         x=108.04°         Al/(Th) All/(Te)           (OH).6H₂O         (OH)3         Tric.         a=9.5804         x=887°         Al/(Th) All/(Te)           (OH)6.33H₂O         2mlag.²(H₂O)₃         Trig.         a=12.204         a=1.3674           (OH)3.33H₂O         2mlag.²(H₂O)₃         Trig.         a=12.204         a=8.804         z=8           (OH)1.4All.²O         2mlag.²(H₂O)₃         7mlag.²(H₂O)₃         7mlag.²(H₂O)₃         2mlag.²(H₂O)₃           (CH)1.0.4H₂O         2mlag.²(H₂O)₃         2mlag.²(H₂O)₃         2mlag.²(H₂O)₃           (CH)3.4All.²O         2mlag.²(H₂O)₃         2mlag.²(H₂O)₃         2mlag.²(H₂O)₃           (CH,28H₂O         2mlag.²(H₂O)₃         2mlag.²(H₂O)₃         2mlag.²(H₂O)₃           (CH,28H₂O         2mlag.²(H₂O)₃         2mlag.²(H₂O)₃         2		(OH).4H <sub>2</sub> O	Fe°P <sub>2</sub> 'O <sub>8</sub> (OH)]	Pbca	b=18.751A		Fe(8c) P <sub>I-II</sub> (8c)		Min., 1974, 59, 48-59; SR, 43A, 252-253: K/R 157-RRW 550-
Cu₂(UO₂)₂(VO₄)²         Cu₂²(OH)₂(H₂O)₅         Mon.         a=10.599A         β=103.42°           (OH)₂ 6H₂O         (2∞){(UO₂)₂(Y₂O₃)}         P2√/a         b=8.903A         Z=2           (OH)₃ 6H₂O         (2∞){(UO₂)₂(Y₂O₃)}         Orth.         a=21.99A         Z=2           (OH)₃ 6H₂O         (2∞){(Mn²(H₂O)₃         Tric.         a=21.99A         A (1h) A  (1e)           TE         MnAl(PO₃OH)²         Tric.         a=21.90A         A (1h) A  (1e)           (OH)₃ 6H₂O         (1∞){14²(PO₃OH)²         Tric.         a=21.80A         A (1h) A  (1e)           (OH)₃ 6H₂O         (OH)₃ 6H₂O         Tric.         a=25.90A         α=108.04°         A (1h) A  (1e)           (OH)₃ 6H₂O         (OH)₃ 33H₂O         Trig.         a=12.20A         a=13.67A         a=12.20A         a=13.67A           (OH)₃ 33H₂O         Cul₅AlSO₄(OH)₃         R 3         Z=1         Z=13         Z=13           (OH)₃ 4H₂O         Pacal         Pacal         A=8.0A         Z=8         A=3.03°           (OH)₃ 4H₂O         Pacal         Pacal         A=3.04A         Z=6         A=3.04           (OH)₃ 4H₂O         Pacal         Pacal         A=3.04A         A=6         A=6           (OH)₃ 4H₂O         Pacal			(=Overne)		¥ 705.7-5		:		551; Hölzel, 176.
(OH) <sub>2</sub> 6H <sub>2</sub> O         {2∞}{(UO <sub>2</sub> )e(UO <sub>2</sub> )²V <sub>2</sub> O <sub>8</sub> }         P2/4a         b=8.903Å Z=2           Ca(UO <sub>2</sub> )e(CO <sub>3</sub> )₅         Ca(UO <sub>2</sub> )e(CO <sub>3</sub> )₅         Orth.         b=8.903Å Z=2           Ca(UO <sub>2</sub> )e(CO <sub>3</sub> )₅         Orth.         b=1.99Å Z=2           (OH) <sub>4</sub> .6H <sub>2</sub> O         Tric.         a=9.500Å α=108.04°         All(1h) All(1e)           (OH) <sub>2</sub> .6H <sub>2</sub> O         (OH) <sub>3</sub> 33H <sub>2</sub> O         Trig.         a=9.500Å α=108.04°         All(1h) All(1e)           NaMQ₂Fes(SO <sub>4</sub> )¬         Nal³Mg₂²(H₂O)₃         Trig.         a=12.20Å aR=13.67Å         A=23.03°           (OH) <sub>10</sub> .4H <sub>2</sub> O         Na <sub>4</sub> (UO <sub>2</sub> )e(SO <sub>4</sub> )₃         Trig.         a=12.20Å aR=13.67Å         A=53.03°           (OH) <sub>10</sub> .4H <sub>2</sub> O         Orth.         a=8.48Å Z=8         A=3.03°         A=3.03°           (OH) <sub>10</sub> .4H <sub>2</sub> O         P3.7         P=8.48Å Z=8         A=10.3°24°           KAl <sub>2</sub> (NO) <sub>3</sub> (OH) <sub>10</sub> Mon.         a=10.89Å B=92·10°           KAl <sub>2</sub> (UO <sub>2</sub> )e(SiO <sub>4</sub> )e         P2.4a         B=11.04 Z=6           H <sub>6</sub> U(UO <sub>2</sub> )e(SiO <sub>4</sub> )e         P2.4a         B=11.04 Z=6           C=20.12Å         B=1.03°24°	SENGIERITE	Cu <sub>2</sub> (UO <sub>2</sub> ) <sub>2</sub> (VO <sub>4</sub> ) <sub>2</sub>	Cu <sub>2</sub> °(OH) <sub>2</sub> (H <sub>2</sub> O) <sub>6</sub>	Mon.	a=10.599Å	β=103.42			SR,46A,248;Am.Min.,1981,66,
Ca(UO <sub>2</sub> ) <sub>6</sub> (CO <sub>3</sub> ) <sub>5</sub> Orth. a=21.99A z=2 b=15.63A c=487A c=4.87A c=4.87A c=4.87A c=4.87A c=4.87A c=4.87A c=4.887 a=108.04° All(1h) All(1e)         Orth. a=51.99A z=108.04° All(1h) All(1e)           TE         MnAl(PO <sub>3</sub> OH) <sub>2</sub> (t <sub>1</sub> O <sub>2</sub> )[Al <sup>o</sup> (PO <sub>3</sub> OH) <sub>2</sub> (t <sub>1</sub> O <sub>2</sub> )(All(1c))         Tric. a=9.818A p=98.63° a=108.04° All(1h) All(1e)           NaMg <sub>2</sub> Fe <sub>5</sub> (SO <sub>4</sub> ) <sub>7</sub> (NH) 3H <sub>2</sub> (H <sub>2</sub> O) <sub>3</sub> (OH) <sub>1</sub> (All(1c))         Trig. a=12.20A a=13.67A a=10.374A a=10.3		(OH) <sub>2</sub> .6H <sub>2</sub> O	{2\infty}[(UO <sub>2</sub> ) <sub>2</sub> V <sub>2</sub> O <sub>8</sub> ]	P2 <sub>1</sub> /a	b=8.903Å c=10.085Å	Z=2			220(Abs.);Pov.,503;Str.Tab., 356;RRW,554.
TE MnA(PO <sub>2</sub> OH) <sub>2</sub> {2∞}{ Mn <sup>2</sup> (H <sub>2</sub> O) <sub>6</sub> Tric. a=9.504 α=108.04° All(1h) All(1e) (c) (c) (d) 6H <sub>2</sub> O (d)	SHARPITE	Ca(UO <sub>2</sub> ) <sub>6</sub> (CO <sub>3</sub> ) <sub>5</sub>		Orth.	a=21.99Å	Z=2			Am.Min., 1985, 70,220(Abs.);
TE MnAi(PO <sub>3</sub> OH) <sub>2</sub> {2∞}{ Mn(2) <sub>2</sub> OH) <sub>2</sub> P 1 b=9.818A α=108.04° Ali(1h) Alii(1e) C=6.860A α=108.04° Ali(1h) Alii(1e) C=6.860A γ=99.63° Mn(2l) P <sub>1+1</sub> (2l) C=35.13A α=12.20A α=13.63 α=13.64 α=13.6				خ	D=15.63A C=4.487Å				H0lzel, 109.
NaMg,Fe <sub>5</sub> (SO <sub>4</sub> ) <sub>7</sub>   Na <sup>1-3</sup> Mg <sub>2</sub> <sup>2</sup> (H <sub>2</sub> O) <sub>33</sub>   Trig.   C=6.860Å   Y=98.87°   Z=2   Z=2   Z=2   Z=1   Z=1/3   Z	SINKANKASITE		{2∞}[ Mn²(H <sub>2</sub> O) <sub>6</sub>	Tric.	a=9.590Å	$\alpha = 108.04^{\circ}$	Al <sub>i</sub> (1h) Al <sub>ii</sub> (1e) Mn(2i) P <sub>i-II</sub> (2i)		Am.Min., 1995, 80, 620-627; Am. Min., 1984, 69, 380-382; K/B, 155.
NaMg <sub>2</sub> Fe <sub>5</sub> (SO <sub>4</sub> )?         Nal*3Mg <sub>2</sub> <sup>2</sup> (H <sub>2</sub> O) <sub>33</sub> Trig.         a=12.20Å a <sub>R</sub> =13.67Å           (OH) <sub>6</sub> .33H <sub>2</sub> O         2∞]{Fe <sub>5</sub> °S <sup>2</sup> O <sub>28</sub> (OH) <sub>6</sub> ]         R 3         C=35.13Å α=53.03°           Na <sub>4</sub> (UO <sub>2</sub> ) <sub>6</sub> (SO <sub>4</sub> ) <sub>3</sub> Orth.         a=8.80Å Z=8           (OH) <sub>10</sub> .4H <sub>2</sub> O         ?         b=68.48Å Z=8           : Cu <sub>6</sub> AISO <sub>4</sub> (OH) <sub>12</sub> Cl         Hex.         a=8.245Å Z=2           : SH <sub>2</sub> O         P3c1         c=14.34Å Z=6           CI <sub>2</sub> .8H <sub>2</sub> O         Non.         a=10.89Å B=92°10'           CI <sub>2</sub> .8H <sub>2</sub> O         ?         b=13.04Å Z=6           H <sub>6</sub> U(UO <sub>2</sub> ) <sub>6</sub> (SiO <sub>4</sub> ) <sub>6</sub> Non.         a=17.64Å B=103°24'           H <sub>6</sub> U(O <sub>2</sub> ) <sub>6</sub> (SiO <sub>4</sub> ) <sub>6</sub> P2 <sub>4</sub> /a         b=21.00Å Z=6			(OH)]]	-	c=6.860Å	γ=98.87° Z=2			Ì
(OH) <sub>6</sub> .33H <sub>2</sub> O   2∞][Fe <sub>5</sub> °S <sup>2</sup> 'O <sub>26</sub> (OH) <sub>6</sub> ] R 3   C=35.13Å α=53.03°'    Na <sub>4</sub> (UO <sub>2</sub> ) <sub>6</sub> (SO <sub>4</sub> ) <sub>3</sub>   Orth.   a=8.80Å   Z=8    Cu <sub>6</sub> AlSO <sub>4</sub> (OH) <sub>12</sub> Cl   Hex.   a=8.245Å   Z=2    SA <sub>2</sub> O   Hex.   a=10.89Å   B=92°10'    CI <sub>2</sub> .8H <sub>2</sub> O   Non.   a=17.64Å   B=103°24'    H <sub>6</sub> U(UO <sub>2</sub> ) <sub>6</sub> (SiO <sub>4</sub> ) <sub>6</sub>   P2 <sub>4</sub> /a   D=21.00Å   Z=6    Sa <sub>2</sub> O   Sa <sub>2</sub> O	SLAVÍKITE	NaMg <sub>2</sub> Fe <sub>5</sub> (SO <sub>4</sub> ) <sub>7</sub>	Na <sup>13</sup> /Mg <sub>2</sub> °(H <sub>2</sub> O) <sub>33</sub>	Trig.	a=12.20Å	a <sub>R</sub> =13.67Å			SR,41A,351;Str.Tab.,293;Pov.,
Na <sub>4</sub> (UO <sub>2</sub> ) <sub>6</sub> (SO <sub>4</sub> ) <sub>3</sub>		(OH) <sub>6</sub> .33H <sub>2</sub> O	2∞}[Fe <sub>5</sub> °S <sub>7</sub> O <sub>28</sub> (OH) <sub>6</sub> ]	ec C	c=35.13Å Z=1	α=53.03°' Z <sub>R</sub> =1/3	,		599;Zeit.Krist.,1998, <u>213,</u> 141- 150;Bull.Mi.,1964, <u>87</u> ,622
(OH) <sub>10.</sub> 4H <sub>2</sub> O : c=14,55A : Cu <sub>6</sub> AlSO <sub>4</sub> (OH) <sub>12</sub> Cl : 3H <sub>2</sub> O KAl <sub>7</sub> (NO <sub>3</sub> ) <sub>4</sub> (OH) <sub>16</sub> Cl <sub>2</sub> .8H <sub>2</sub> O Cl <sub>2</sub> .8H <sub>2</sub> O H <sub>6</sub> U(UO <sub>2</sub> ) <sub>6</sub> (SiO <sub>4</sub> ) <sub>6</sub> : 30H <sub>2</sub> O Cl <sub>2</sub> .8H <sub>2</sub> O H <sub>6</sub> U(UO <sub>2</sub> ) <sub>6</sub> (SiO <sub>4</sub> ) <sub>6</sub> P <sub>2,</sub> /a b=21.00A Z=6 C=30.71A B=103°24' P <sub>2,</sub> /a b=21.00A Z=6	SODIUM -	Na4(UO <sub>2</sub> ) <sub>6</sub> (SO <sub>4</sub> ) <sub>3</sub>		Orth.	a=8.80Å	Z=8			Hölzel, 138.
Cu <sub>0</sub> AISO <sub>4</sub> (OH) <sub>12</sub> Cl       Hex.       a=8,245Å z=2         .3H <sub>2</sub> O       P3c1       c=14.34Å         KAI <sub>7</sub> (NO <sub>3</sub> ) <sub>4</sub> (OH) <sub>16</sub> Mon.       a=10.89Å z=6         Cl <sub>2</sub> ·8H <sub>2</sub> O       c=30.71Å       c=30.74Å         H <sub>6</sub> U(UO <sub>2</sub> ) <sub>6</sub> (SiO <sub>4</sub> ) <sub>6</sub> Mon.       a=17.64Å p=103°24′         P2 <sub>4</sub> /a       b=21.00Å z=6         c=20.12Å       c=20.12Å	- ZIPPEITE	(OH) <sub>10</sub> .4H <sub>2</sub> O		<i>د</i>	b=68.48Å c=14.55Å				
3H2O         P3c1         c=14.34A           KAI <sub>7</sub> (NO <sub>3</sub> ) <sub>4</sub> (OH) <sub>16</sub> Mon.         a=10.89Å         β=92°10'           CI <sub>2</sub> .8H <sub>2</sub> O         ?         b=13.04Å         Z=6           Ci <sub>2</sub> .8H <sub>2</sub> O         C=30.71Å         Mon.         a=17.64Å         β=103°24'           H <sub>6</sub> U(UO <sub>2</sub> ) <sub>6</sub> (SiO <sub>4</sub> ) <sub>6</sub> Mon.         a=17.64Å         β=103°24'         c=20.12Å	SPANGOLITE	CueAISO4(OH)12CI		Hex.	a=8,245Å	Z=2			RRW,571;Pov.,332;Str.Tab.,
KAI <sub>7</sub> (NO <sub>3</sub> ) <sub>4</sub> (OH) <sub>16</sub>		.3H <sub>2</sub> O		P3c1	c=14.34Å				294;Hölzel,134;Am.Min.,1949, 34,181-187.
Cl <sub>2</sub> .8H <sub>2</sub> O Cl <sub>2</sub> .8H <sub>2</sub> O H <sub>6</sub> U(UO <sub>2</sub> ) <sub>6</sub> (SiO <sub>4</sub> ) <sub>6</sub> Mon. a=17.64Å β=103°24' 30H <sub>2</sub> O P2 <sub>4</sub> /a b=21.00Å Z=6 c=20.12Å	SVEITE	KAI-(NO3),(OH),6		Mon.	a=10.89Å	β=92°10'			Am.Min., 1982, 67, 1076 (Abs.);
H <sub>6</sub> U(UO <sub>2</sub> ) <sub>6</sub> (SiO <sub>4</sub> ) <sub>6</sub> P2 <sub>4</sub> /a b=21.00Å Z=6 c=20.12Å		Cl <sub>2</sub> .8H <sub>2</sub> O		٠.	b=13.04Å c=30.71Å	Z=6			Hölzel,96.
P2,/8 0=21.00A 2=6 0=20.12Å	SWAMBOITE	H <sub>6</sub> U(UO <sub>2</sub> ) <sub>6</sub> (SiO <sub>4</sub> ) <sub>6</sub>		Mon.	a=17.64Å	β=103°24'			Am.Min., 1983, 68, 1250 (Abs.);
		.30H <sub>2</sub> O		P2 <sub>1</sub> /8	c=20.12Å	9=7			292;Can.Min.,1981,19,553-557

NAME	CHEMICAL	STRUCTURAL EODMIII A	SPACE	UNIT CELL DIMENSIONS	MENSIONS	EQUIVALENT	STRUCTURE TYPE	REFERENCES
SWARTZITE	CaMg(UO <sub>2</sub> )(CO <sub>3)3</sub> . 12H <sub>2</sub> O	Mg°Ca <sup>[880]</sup> (H <sub>2</sub> O) <sub>12</sub> [U <sup>[6p30]</sup> O <sub>2</sub> (C <sup>r</sup> O <sub>3)3</sub> ]	Mon. P2 <sub>1</sub> /m	a=11.080Å b=14.634Å c=6.439Å	β=99.43° Z=2			Min.Abs.,87M/2145;Pov.,625; Str.Tab.,249;RRW,594;Hölzel, 109.
SYNADELPHITE	(Mn,Mg,Ca) <sub>9</sub> (AsO <sub>4</sub> ) <sub>2</sub> (AsO <sub>3</sub> ) (OH) <sub>9</sub> ,2H <sub>2</sub> O	(Mn,Mg,Ca),As2 As <sup>[5y]</sup> [O <sub>11</sub> (OH),(H <sub>2</sub> O) <sub>2</sub> ] <sup>ch</sup>	Orth. Pnma	a=10.754Å b=18.865Å c=9.884Å	Z=4	Asi(4c) Asii(8d) Mni(4c) Mnii-v(8d)		Am.Min.,1970, <u>55,</u> 2023-2037; RRW,596;Pov.,512;Str.Tab., 321;SR, <u>35A</u> ,360-361.
TENGCHONGITE	004)2		Orth. A2 <sub>1</sub> 22	a=15.616Å b=13.043Å c=17.716Å	Z=4			Am.Min.,1988 <u>,73</u> ,195-196 (Abs.);Hölzel,141.
TERUGGITE	Ca <sub>4</sub> Mg (AsB <sub>6</sub> O <sub>11</sub> (OH) <sub>§</sub> ) <sub>2</sub> . 14H <sub>2</sub> O	Mg°(H <sub>2</sub> O) <sub>6</sub> {3∞}{Ca <sub>4</sub> <sup>8</sup> } (As'Be <sup>6t</sup> O <sub>11</sub> (OH) <sub>6</sub> ) <sub>2</sub> (H <sub>2</sub> O) <sub>8</sub> ]	Mon. P2₁/a	a=15.675Å b=19.920Å c=6.255Å	β=95°20' Z=2	Mg(2a) As(4e) Ca∟ı(4e) B∟vı(4e)		Am.Min., 1973, <u>58</u> , 1034-1043; Am.Min.1968, <u>53</u> , 1815-1827; SR. <u>394</u> , 265-266, RRW, 610; Pov., 483, Str. Tab., 262.
THREADGOLDITE AI(UO <sub>2)2</sub> (PO <sub>4)2</sub> (OH).8H <sub>2</sub> O	AI(UO <sub>2</sub> ) <sub>2</sub> (PO <sub>4</sub> ) <sub>2</sub> (OH).8H <sub>2</sub> O	(H <sub>2</sub> O) <sub>8</sub> (OH)[ Al <sup>6]</sup> {2∞}[U <sup>[2+4]</sup> O <sub>2</sub> P <sup>4</sup> O <sub>4]2</sub> ] (≈Autunite)	Mon. Cc	a=20.168Å b=9.842Å c=19.719Å	β=110.71° Z=8	U-⊦v(4a) P∟v(4a) AI⊦⊩(4a)	(H <sub>2</sub> O) <sub>10</sub> [Ca <sup>l9]</sup> {2∞}[U <sup>(4+2)</sup> O <sub>2</sub> P <sup>‡</sup> O <sub>4</sub> ] <sub>2</sub> ] Dist. deriv. AUTUNITE	Acta Cryst., 1979, <u>B35</u> , 3017- 3020; SR. <u>45A</u> , 313-314; Am. Min., 1980, <u>65,</u> 209(Abs.); K/B, 162.
TIPTOPITE	K <sub>2</sub> (Li,Na,Ca) <sub>6</sub> Be <sub>6</sub> (PO <sub>4</sub> ) <sub>6</sub> (OH) <sub>2</sub> . 1.3H <sub>2</sub> O	(Li,Na,Ca) <sub>6</sub> K <sub>2</sub> (H <sub>2</sub> O) <sub>1·3</sub> (OH) <sub>2</sub> {3∞}{Be <sub>c</sub> P <sub>c</sub> O <sub>24</sub> ] (≈Cancrinite,Zeolite)	Hex. P6 <sub>3</sub>	a=11.655Å c=4.692Å		Be(6c) P(6c) O <sub>LIV</sub> (6c) K(2b) 		Am.Min.,1987, <u>72</u> ,816-820; Hölzel,159;LF,300.
TISINALITE	H <sub>3</sub> Na <sub>3</sub> (Mn,Ca,Fe)Ti Si <sub>6</sub> (O,OH) <sub>18</sub> .2H <sub>2</sub> O		Trig. R <sup>.</sup> 3m	a=10.14Å c=13.08Å Z=1	a <sub>R</sub> =7.30Å α=88° Z <sub>R</sub> =1/3			Am.Min.,1981, <u>66,</u> 219-220 (Abs.);Hölzel,208.
TLALOCITE	Cu <sub>10</sub> Zn <sub>6</sub> Te <sub>3</sub> O <sub>11</sub> Cl (OH) <sub>25</sub> .27H <sub>2</sub> O		Orth.	a=16.780Å b=19.985Å c=12.069Å	1 1			Min.Abs.,80-0755;Hölzel,93; Min.Mag.,1975, <u>40,</u> 221-226; Hölzel,93.
TRASKITE	Ba <sub>12</sub> Fe <sub>2</sub> Ti <sub>6</sub> Si <sub>12</sub> O <sub>54</sub> Cl <sub>3-</sub> 7H <sub>2</sub> O		Hex. P <sup>.</sup> 6m2	a=17.89Å c=12.33Å	Z=3?			Min.Abs.,78-202;Holzel,208; RRW,623-624;Pov.,366;Str. Tab.407;Am.Min.,1965, <u>50</u> ,314- 340.
TRIANGULITE	Al <sub>3</sub> (UO <sub>2</sub> ) <sub>4</sub> (PO <sub>4</sub> ) <sub>4</sub> (OH) <sub>5</sub> .5H <sub>2</sub> O		Tric. P1	a=10.39Å b=10.56Å c=10.60Å	α=116.4° β=107.8° γ=113.4° Z=1			Am.Min., 1984, <u>69,</u> 212(Abs.); Hölzel, 183.
TRÖGERITE	(H <sub>3</sub> O) <sub>2</sub> (UO <sub>2</sub> ) <sub>2</sub> (AsO <sub>4</sub> ) <sub>2</sub> .6H <sub>2</sub> O	U <sub>2</sub> <sup>8</sup> As <sub>2</sub> <sup>1</sup> [O <sub>12</sub> (H <sub>2</sub> O) <sub>6</sub> (H <sub>3</sub> O) <sub>2</sub> ]	Tet. P4/nmm	a=7.16Å c=8.80Å	Z=4 ?			Pov.,522;RRW,629;Str.Iab., 352;Min.Abs.,76-874;Hölzel, 180;
TRONA	Na <sub>3</sub> (HCO <sub>3</sub> )(CO <sub>3</sub> ). 2H <sub>2</sub> O	2∞[Na₃ <sup>op</sup> H(H₂O)₂ {g}[C <sup>tr</sup> O₃]₂]	Mon. C2/C	a=20.346Å b=3.49Å c=10.296Å	β=106°26′ Z=4	Na <sub>1</sub> (4e) Na <sub>11</sub> (8q) H <sub>1</sub> (4a) H <sub>1-111</sub> (8f) C(8f) O <sub>1-IV</sub> (8f)	2∞[Na <sub>3</sub> <sup>op</sup> H(H <sub>2</sub> O) <sub>2</sub> {g}[C <sup>t</sup> O <sub>3</sub> ] <sub>2</sub> ] TRONA	LF,249;RRW,630;Pov,626,Am. Min.,1959,44,274-281;SR,20, 389-392;Str.Tab.,245.

CaculOsia(Poly)	NAME	CHEMICAL	STRUCTURAL EODMIII A	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT	STRUCTURE TYPE	REFERENCES
CZPM		LOKWOLA 0.000	NOW WOLK	TOOLS IN	2010	000			Am Min 1000 75 243/Ahs ):
Ca <sup>[8]</sup> (H <sub>2</sub> O <sub>2</sub> ) <sub>2</sub> (SlO <sub>4</sub> ) <sub>2</sub> P2, a = 15.42A	ULKICHILE	CaCu(UO <sub>2</sub> )(PO <sub>4</sub> ) <sub>2</sub>		C2/m	a=12.79A b=6.85Å	7=91.03 <sup>-</sup>			Str. Tab., 584; Hölzel suppl
Ca <sup>[3]</sup> (H <sub>2</sub> O) <sub>2</sub> H <sub>2</sub> (2∞)  Ca <sup>[3]</sup> (H <sub>2</sub> O) <sub>3</sub> H <sub>2</sub> (2∞)  [(U <sup>[2-3]</sup> O <sub>2</sub> ) <sub>2</sub> (SiO <sub>3</sub> ) <sub>3</sub> ]  P2 <sub>1</sub> C=6.665A  Ca <sup>[3]</sup> (H <sub>2</sub> O) <sub>3</sub> H <sub>2</sub> (2∞)  Ca <sup>[4]</sup> (H <sub>2</sub> O) <sub>3</sub> H <sub>2</sub> (2∞)  Data		)		•	c=13.02Å				
Pbnm	URANCALCARITE	Ca(UO <sub>2</sub> ) <sub>3</sub> CO <sub>3</sub> (OH) <sub>6</sub>		Orth.	a=15.42Å	2=4			Am.Min., 1985, 70, 438-439
Ca(UO))?         Ca(UO)?		.3H2O		Pbnm	b=16.08A c=6.970Å				(Abs.);Bull.Min.,1984, <u>107,</u> 21-   24.
CalCo   CalC	Tive in Contract			Mon	0-1E 000Å	0-07 270	(9C) Si (9C)	_	Acts Crest 1988 C44 421-424
HAI(UO <sub>2</sub> ) <sub>4</sub> (PO <sub>4</sub> ) <sub>4</sub>   Tet.   a=7.00Å   Z=1   Det.   a=9.22Å   Z=2   Det.   a=9.22Å   Det.   a=9.22Å   Z=4   Det.   a=9.22Å   Det.   Det.   a=9.22Å   Det.   Det.   a=9.23Å   Det.	UKANOPHANE		Ca <sup></sup> (H <sub>2</sub> O) <sub>5</sub> H <sub>2</sub> {2∞} [(U <sup>[2+5]</sup> O <sub>2</sub> ) <sub>2</sub> (SiO <sub>4</sub> ) <sub>2</sub> ]	P2,	a=15.909A b=7.002Å	p=97.27 Z=2	Ca(2a) Sili(2a)		Pov., 455-456, Str. Tab., 385;
HAN(UO <sub>2</sub> ) <sub>2</sub> (PO <sub>4</sub> ) <sub>4</sub> .   Tet.   a=7.00Å Z=1   40H <sub>2</sub> O <sub>1</sub>   C=30.02Å   C=30.02Å   C=30.02Å   C=30.02Å   C=30.02Å   C=30.02Å   C=30.02Å   C=2.03   C=2.02Å   C=2.03   C=2.0			7/1		c=6.665Å		O <sub>I-XVII</sub> (2a)	URANOPHANE	RRW,641;Am.Min.,1981, <u>66,</u> 610-625:LF.244
(Fe Ba Pb)(Uo <sub>2</sub> ) <sub>2</sub> P4 <sub>2</sub> /n         c=30.02A           (Fe Ba Pb)(Uo <sub>2</sub> ) <sub>2</sub> Orth.         a=9.22A         Z=2           (Mg,Ca) <sub>4</sub> (Uo <sub>2</sub> ) <sub>2</sub> Orth.         p=13.81A         Z=2           (Mg,Ca) <sub>4</sub> (Uo <sub>2</sub> ) <sub>2</sub> Orth.         ?         P222;           (Si2 <sub>2</sub> ) <sub>2</sub> , s(OH) <sub>2</sub> .         Orth.         ?         P <sub>14</sub> (Ab)           (Si2 <sub>2</sub> ) <sub>2</sub> , s(OH) <sub>2</sub> .         P24,mn         a=17.06A         Z=4         P <sub>14</sub> (Ab)           (OH) <sub>2</sub> , H <sub>2</sub> O         (PC) <sub>2</sub> , (OH) <sub>2</sub> I         P24,mn         a=17.06A         Z=4         P <sub>14</sub> (Ab)           (OH) <sub>2</sub> , H <sub>2</sub> O         (PC) <sub>2</sub> , (OH) <sub>2</sub> I         Mon.         a=17.06A         Z=4         P <sub>14</sub> (Ab)           (OH) <sub>2</sub> , H <sub>2</sub> O         (PC) <sub>2</sub> , (OH) <sub>2</sub> I         Mon.         a=20.81A         E=20.81         E=24.5A           Sr <sub>2</sub> (B <sub>2</sub> O <sub>2</sub> (OH)) <sub>2</sub> B         Sr <sub>2</sub> (Mn,Ca,Zh) <sub>2</sub> As <sub>4</sub> Mon.         a=20.81A         E=4         B <sub>14</sub> (4a)           Sr <sub>2</sub> (B <sub>2</sub> O <sub>2</sub> (OH)) <sub>2</sub> B         Sr <sub>2</sub> (Mn,Ca,Zh) <sub>2</sub> As <sub>4</sub> Mon.         a=10.17A         Z=4         B <sub>14</sub> (4a)           Sr <sub>2</sub> (B <sub>2</sub> O <sub>3</sub> (OH)) <sub>2</sub> B         Mn, Ca,Zh) <sub>2</sub> As <sub>4</sub> Mon.         a=10.17A         Z=4         A <sub>2</sub> Mn,(4a)           (OH) <sub>3</sub> , H <sub>2</sub> O         (Sa <sub>2</sub> (So <sub>4</sub> ) <sub>2</sub> (Se <sub>4</sub> As <sub>2</sub> O <sub>3</sub> )         (Mn,Ca,Zh) <sub>2</sub> As <sub>4</sub>	TINANOSPATHITE	HAI(IO2),(PO.),		Tet	a=7.00Å	Z=1			Min.Mag.,1978,C44,117-128;
(Fe,Ba,Pb)(UO2)2         Orth. VMo <sub>4</sub> (OH) <sub>4</sub> .12H <sub>2</sub> O         Def.13.81 A P222 <sub>1</sub> b=13.81 A P222 <sub>1</sub> b=13.81 A P2.17A         Z=2           (Mg,Ca) <sub>4</sub> (UO <sub>2)</sub> 4 (Sig <sub>2</sub> O <sub>3</sub> b <sub>3</sub> s(OH) <sub>5</sub> . (Sig <sub>2</sub> O <sub>3</sub> b <sub>3</sub> s(OH) <sub>5</sub> . (OH) <sub>4</sub> -4H <sub>2</sub> O         (H <sub>2</sub> O) <sub>4</sub> (OH) <sub>4</sub> U (PCO <sub>3</sub> ) <sub>2</sub> (OH) <sub>2</sub> D         Orth. P2.17M		40H <sub>2</sub> O		P42/n	c=30.02Å				Pov., 763; RRW, 642; Hölzel, 180.
WO <sub>4</sub> (OH) <sub>4</sub> ,12H <sub>2</sub> O         P2221         D=13.81A           (Si <sub>2</sub> O <sub>3</sub> ) <sub>5</sub> s(OH) <sub>5</sub> .         Orth.         ?         P2221         P21.17A           (Si <sub>2</sub> O <sub>3</sub> ) <sub>5</sub> s(OH) <sub>5</sub> .         (H <sub>2</sub> O) <sub>4</sub> (OH) <sub>4</sub> U         Orth.         ?         P2.176A         Z=4         P <sub>10</sub> (4b) U <sub>10</sub> (2a)           (OH) <sub>5</sub> 4H <sub>2</sub> O         (PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>2</sub> I         P2.170H         D=16.78A         Z=4         P <sub>10</sub> (4b) U <sub>10</sub> (2a)           (OH) <sub>5</sub> 4H <sub>2</sub> O         (PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>2</sub> I         Mon.         a=10.55A         Z=4         P <sub>10</sub> (4b)           (OH) <sub>1</sub> 11H <sub>2</sub> O         (PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>2</sub> I         Mon.         a=20.81A         Z=24         B <sub>10</sub> (4a)           (OH) <sub>2</sub> H <sub>2</sub> O         (E <sub>2</sub> O <sub>2</sub> (OH) <sub>2</sub> ) <sub>2</sub> B <sub>2</sub> (OH) <sub>2</sub> B	URANOTUNGSTI-	(Fe,Ba,Pb)(UO <sub>2</sub> ) <sub>2</sub>		Orth.	a=9.22Å	Z=2			Am.Min.,1986,71,1547(Abs.);
(Mg,Ca) <sub>4</sub> (UO <sub>2</sub> ) <sub>4</sub> (Sl <sub>7</sub> O <sub>3</sub> ) <sub>5</sub> s(OH) <sub>5</sub> .  (Sl <sub>7</sub> O <sub>3</sub> ) <sub>5</sub> s(OH) <sub>5</sub> .  (Sl <sub>7</sub> O <sub>3</sub> ) <sub>5</sub> s(OH) <sub>5</sub> .  (UUC) <sub>2</sub> (PO <sub>4</sub> ) <sub>2</sub> (H <sub>7</sub> O <sub>3</sub> (OH) <sub>3</sub> U (PO <sub>3</sub> ) <sub>2</sub> (OH) <sub>3</sub> U (PO <sub>3</sub> ) <sub>2</sub> (OH) <sub>3</sub>    A(UO <sub>2</sub> ) <sub>2</sub> (VO <sub>4</sub> ) <sub>2</sub> (PO <sub>3</sub> ) <sub>2</sub> (OH) <sub>3</sub>    A(UO <sub>2</sub> ) <sub>2</sub> (VO <sub>4</sub> ) <sub>2</sub> (PO <sub>3</sub> ) <sub>2</sub> (OH) <sub>3</sub>    A(UO <sub>2</sub> ) <sub>2</sub> (VO <sub>4</sub> ) <sub>2</sub> (PO <sub>3</sub> ) <sub>2</sub> (OH) <sub>3</sub>    A(UO <sub>2</sub> ) <sub>2</sub> (VO <sub>4</sub> ) <sub>2</sub> (PO <sub>3</sub> ) <sub>2</sub> (OH) <sub>3</sub>    A(UO <sub>2</sub> ) <sub>2</sub> (VO <sub>4</sub> ) <sub>2</sub> (PO <sub>3</sub> ) <sub>2</sub> (OH) <sub>3</sub>    A(UO <sub>2</sub> ) <sub>2</sub> (VO <sub>4</sub> ) <sub>2</sub> (PO <sub>3</sub> ) <sub>2</sub> (OH) <sub>3</sub>    A(UO <sub>2</sub> ) <sub>2</sub> (VO <sub>4</sub> ) <sub>2</sub> (PO <sub>3</sub> ) <sub>3</sub> (OH) <sub>3</sub>    A(UO <sub>2</sub> ) <sub>2</sub> (VO <sub>4</sub> ) <sub>2</sub> (PO <sub>3</sub> ) <sub>4</sub> (DH) <sub>2</sub>    A(UO <sub>2</sub> ) <sub>2</sub> (VO <sub>4</sub> ) <sub>2</sub> (PO <sub>3</sub> ) <sub>4</sub> (PO <sub>3</sub> ) <sub>4</sub> (DH) <sub>2</sub>    A(UO <sub>2</sub> ) <sub>2</sub> (VO <sub>4</sub> ) <sub>2</sub> (PO <sub>3</sub> ) <sub>4</sub>	<b>H</b>	WO <sub>4</sub> (OH) <sub>4</sub> .12H <sub>2</sub> O		P2221	D=13.81A C=7.17Å				H0lzel,141.
(Sh2O <sub>3</sub> ) S(OH) <sub>2</sub> (H2O <sub>4</sub> ) (	TT ISOIT	(Mr.Ca).(IIO.).		dright	2				Am.Min 1959.44,464-465;
U(UC <sub>2</sub> ) <sub>2</sub> (PO <sub>4</sub> ) <sub>2</sub> (H <sub>2</sub> O) <sub>4</sub> (OH) <sub>4</sub> U         Orth.         a=17.06Å         Z=4         P <sub>LII</sub> (4b) U <sub>1II</sub> (2a)           (OH) <sub>6</sub> .4H <sub>2</sub> O         {2∞}{(U <sup>2-3</sup> O <sub>2</sub> ) <sub>2</sub> P2 <sub>1</sub> /mn         D=16.76Å         U <sub>V-V</sub> (4b)           AI(UC <sub>2</sub> ) <sub>2</sub> (VO <sub>4</sub> ) <sub>2</sub> (P¹O <sub>4</sub> ) <sub>2</sub> (OH) <sub>2</sub> ]         Mon.         a=10.84Å         Z=4           AI(UC <sub>2</sub> ) <sub>2</sub> (VO <sub>4</sub> ) <sub>2</sub> Sr <sub>2</sub> (W <sub>1</sub> ) <sub>2</sub> (P <sub>1</sub> ) <sub>2</sub> Mon.         a=20.81Å         β=92°1'         Sr <sub>2</sub> (4a)           (OH) <sub>3</sub> .11/40         (Sr <sub>2</sub> (B <sub>2</sub> O <sub>8</sub> (OH)) <sub>2</sub> B         Sr <sub>2</sub> (B <sub>2</sub> O <sub>8</sub> (OH)) <sub>2</sub> B         Mon.         a=20.81Å         β=92°1'         Sr <sub>2</sub> (4a)           (OH) <sub>3</sub> .14/20         (Sr <sub>2</sub> (B <sub>2</sub> O <sub>8</sub> (OH)) <sub>2</sub> B         Tric.         a=20.80Å         α=90°0'         C=6.64Å           Sr <sub>2</sub> (B <sub>2</sub> O <sub>8</sub> (OH)) <sub>2</sub> B         Tric.         a=20.80Å         α=90°0'         C=6.63Å         Z=4           (OH) <sub>3</sub> .14/20         (Mn, Ca,Zn) <sub>2</sub> A <sub>2</sub> (Mon.         A1         a=11.72Å         B=90°48'           (CH) <sub>3</sub> .14/20         (Nm, Ca,Zn) <sub>2</sub> A <sub>2</sub> (Mon.         A2         A5(4a)           (ASO <sub>3</sub> OH) <sub>2</sub> (ASO <sub>4</sub> ) <sub>2</sub> .         (Mon. Ca,Zn) <sub>2</sub> A <sub>2</sub> (Mon.         A5(4a)           (ASO <sub>3</sub> OH) <sub>2</sub> (ASO <sub>4</sub> ) <sub>2</sub> .         (H <sub>2</sub> O) <sub>2</sub> (ASO <sub>3</sub> (A) <sub>2</sub> (ASO <sub>3</sub> A) <sub>3</sub>		(Si <sub>2</sub> O <sub>5</sub> ) <sub>5.5</sub> (OH) <sub>5</sub> .			•				Hölzel, 196.
(ÖH)6.4H₂O         (≥∞){(U³-50₂)₃         P2₁/mn         b=16.76A         U <sub>IV-V</sub> (4b)           Al(UO₂)₂(VO₃)₂         (PO₃)₂ (OH)₂         Mon.         a=10.55A         Z=4           A(UO₂)₂(VO₃)₂         A2/a         b=8.44A         B=82²¹¹           (OH)₁.11H₂O         (Sr₂¹I¹⁰¹¹¹¹¹²(OH)₃         Mon.         a=20.81A         β=92²¹¹           Sr₂(B₅O₃(OH))₂B         Sr₂¹I⁰³¹¹²(OH)₃         Mon.         a=20.80A         α=90°0¹           Sr₂(B₅O₃(OH))₂B         Tric.         a=20.80A         α=90°0¹           Sr₂(B₅O₃(OH))₂B         Tric.         a=20.80A         α=90°0¹           (OH)₃.H₂O         (Mn, Ca.Zn)₅²As₄¹         Mon.         a=18.015A         β=90°48¹           (AsO₃OH)₂(AsO₃)₂         (Mn, Ca.Zn)₅²As₄¹         Mon.         a=18.015A         β=90°238²           (Na, K, Ca)₃(Sis/Al₅)         (Na, K, Ca)₃(So₃)         Hex.         a=12.58A         Z=4           A1         (AsO₃OH)₂(Sis/Al₅O₂)         Hex.         a=12.58A         Z=1           A1         (AsO₃OH)₂(Sis/Al₅O₂)         Hex.         a=12.58A         Z=1           A2.a         A1.a         a=5.11A         O□√√(Gc)           A1.a         a=5.14A         B=97°19²           A2.a         A2.a	VANMEERSS-		(H-0)4(OH)4U	Orth.	a=17.06Å	2=4	P <sub>[-11</sub> (4b) U <sub>[-111</sub> (2a)		K/B,161;Am.Min.,1982,67,
Al(UO <sub>2</sub> ) <sub>2</sub> (VO <sub>4</sub> ) <sub>2</sub>   Al(UO <sub>2</sub> )	CHEITE		{2\infty\(\bigcup\)^{[2+5]}\(\O_2\)_3	P2 <sub>1</sub> /mn	b=16.76Å		U <sub>IV-V</sub> (4b)		1077, (Abs.); Hölzel, 181.
Al(UO <sub>2</sub> ) <sub>2</sub> (VO <sub>4</sub> ) <sub>2</sub> Al(UO <sub>2</sub> ) <sub>2</sub> (VO <sub>4</sub> ) <sub>2</sub> Sr <sub>2</sub> (B <sub>5</sub> O <sub>8</sub> (OH)) <sub>2</sub> B  Sr <sub>2</sub> (B <sub>5</sub> O <sub>8</sub> (OH)) <sub>2</sub> B  Sr <sub>2</sub> (B <sub>5</sub> O <sub>8</sub> (OH)) <sub>2</sub> B  Sr <sub>2</sub> (B <sub>5</sub> O <sub>8</sub> (OH)) <sub>2</sub> B  Sr <sub>2</sub> (B <sub>5</sub> O <sub>8</sub> (OH)) <sub>2</sub> B  Sr <sub>2</sub> (B <sub>5</sub> O <sub>8</sub> (OH)) <sub>2</sub> B  Sr <sub>2</sub> (B <sub>5</sub> O <sub>8</sub> (OH)) <sub>2</sub> B  Sr <sub>2</sub> (B <sub>5</sub> O <sub>8</sub> (OH)) <sub>2</sub> B  Sr <sub>2</sub> (B <sub>5</sub> O <sub>8</sub> (OH)) <sub>2</sub> B  Sr <sub>2</sub> (B <sub>5</sub> O <sub>8</sub> (OH)) <sub>2</sub> B  Sr <sub>2</sub> (B <sub>5</sub> O <sub>8</sub> (OH)) <sub>2</sub> B  CoH) <sub>3</sub> .H <sub>2</sub> O  E (Mn, Ca, Zn) <sub>5</sub> (AsO <sub>3</sub> OH) <sub>2</sub> (AsO <sub>4</sub> ) <sub>2</sub> (AsO <sub>3</sub> OH) <sub>2</sub> (AsO <sub>4</sub> ) <sub>3</sub> (AsO <sub>3</sub> OH) <sub>3</sub> (AsO <sub>4</sub> ) <sub>3</sub> (AsO <sub>3</sub> OH) <sub>3</sub> (AsO <sub>4</sub> ) <sub>3</sub> (AsO <sub>4</sub> O <sub>4</sub> (AsO <sub>4</sub> ) <sub>3</sub> (AsO <sub>4</sub> OH) <sub>3</sub> (AsO <sub>4</sub> )  (AsO <sub>4</sub> OH) <sub>3</sub> (AsO <sub>4</sub> ) <sub>3</sub> (AsO <sub>4</sub> OH) <sub>3</sub> (AsO <sub>4</sub> )  (AsO <sub>4</sub> OH) <sub>3</sub> (AsO <sub>4</sub> OH)  (AsO <sub>4</sub>			(P <sup>1</sup> O <sub>4</sub> ) <sub>2</sub> (OH) <sub>2</sub> ]		c=7.023A				
(OH).11H₂O         A2/a         D=8.44A         C=24.52Å           Sf₂(B₅Og(OH))₂B         Sr₂ <sup>(Inor11</sup> B²(OH)₃         Mon.         a=20.81Å         β=92°1'         Sr₁·(4a)           (OH)₃-H₂O         {2∞}{B₂¹B₂¹B₃²(OH)₃²         Aa         b=11.74Å         Z=4         B₁·xi(4a)           Sf₂(B₅Og(OH))₂B         Tric.         a=20.80Å         α=90°0'           Sf₂(B₅Og(OH))₂B         Tric.         a=20.80Å         α=90°0'           (OH)₃-H₂O         A1         b=11.72Å         β=90°48'           (CH)₃-H₂O         (Mn, Ca,Zn)₅ As⁴         Mon.         a=18.015Å         β=96.238°           (AsO₃OH)₂(AsO₄)₂         (Mn, Ca,Zn)₅ As⁴         Mon.         a=18.015Å         Z=4         As₁····(4a)           (Na K, Ca)₅(SisAl₅)         (Na K, Ca)₅(SO₄)         Hex.         a=12.58Å         Z=1         Si(6c) Al(6c)           Ca₂(ASO₄).2H₂O         (H₂O)₂{3∞}{Sisel²Al₅O₂o4}         Mon.         a=5.81Å         β=97°19'           Ca₂(ASO₄).2H₂O         (AsO₃OH)₂.5H₂O         P2./c         P2./c         C=2.7 75Å	VANURALITE	AI(UO <sub>2</sub> ) <sub>2</sub> (VO <sub>4</sub> ) <sub>2</sub>		Mon.	a=10.55A	2=4			Bull.Min., 1970, 93, 242-248; Am.
Sr <sub>2</sub> (B <sub>5</sub> O <sub>8</sub> (OH)) <sub>2</sub> B         Sr <sub>2</sub> <sup>1100</sup> r <sup>11</sup> B <sup>1</sup> (OH) <sub>3</sub> Mon.         a=20.81A         β=92°1'         Sr <sub>1-II</sub> (4a)           (OH) <sub>3</sub> . H <sub>2</sub> O         {2∞}{B <sub>2</sub> <sup>1</sup> D <sub>8</sub> (OH)} <sub>2</sub> Aa         b=11.74A         Z=4         B <sub>1-XI</sub> (4a)           Sr <sub>2</sub> (B <sub>5</sub> O <sub>8</sub> (OH)) <sub>2</sub> B         {2∞}{B <sub>2</sub> <sup>1</sup> D <sub>8</sub> (OH)} <sub>2</sub> Tric.         a=20.80A         α=90°0'           Sr <sub>2</sub> (B <sub>5</sub> O <sub>8</sub> (OH)) <sub>2</sub> B         Tric.         a=20.80A         α=90°0'           (OH) <sub>3</sub> . H <sub>2</sub> O         A1         b=11.72A         β=90°48'           (OH) <sub>3</sub> . H <sub>2</sub> O         A1         c=6.63Å         Z=4           A+D <sub>2</sub> O         (Am, Ca,Zn) <sub>5</sub> As <sub>4</sub> '         Mon.         a=18.015Å         β=96.238°           Mn, A+D <sub>2</sub> O         (Na, K, Ca) <sub>6</sub> (SO <sub>4</sub> )         Hex.         c=9.770Å         Si(6c) Al(6c)           Ca <sub>5</sub> (SO <sub>4</sub> ). 2H <sub>2</sub> O         (H <sub>2</sub> O) <sub>2</sub> (3∞){Si <sub>6</sub> /B <sub>1</sub> 6 <sup>1</sup> O <sub>2</sub> d         Hex.         a=12.58Å         Z=1         Si(6c) Al(6c)           Ca <sub>5</sub> (ASO <sub>4</sub> ). 2H <sub>2</sub> O         (H <sub>2</sub> O) <sub>2</sub> (3∞){Si <sub>6</sub> /B <sub>1</sub> 6 <sup>1</sup> O <sub>2</sub> d         Mon.         a=5.81Å         β=97°19'           Ca <sub>5</sub> (ASO <sub>4</sub> ). 2H <sub>2</sub> O         P2./c         P2./c         C=2.7 7.5A         Si(6c) Al(6c)		(OH).11H <sub>2</sub> O		A2/a	D=8.44A				MIN., 197 1, 30, 039-04U, F0V.,
Sr <sub>2</sub> (B <sub>5</sub> O <sub>8</sub> (OH)) <sub>2</sub> B         Sr <sub>1</sub> <sup>110/11</sup> B <sup>17</sup> (OH) <sub>3</sub> Mon.         a=20.81Å         β=92°1'         Sr <sub>1-II</sub> (4a)           (OH) <sub>3</sub> . H <sub>2</sub> O         {2∞}{B <sub>2</sub> <sup>1</sup> D <sub>8</sub> (OH)} <sub>2</sub> Aa         b=11.74Å         Z=4         B <sub>1-XI</sub> (4a)           Sr <sub>2</sub> (B <sub>5</sub> O <sub>8</sub> (OH)) <sub>2</sub> B         {2∞}{B <sub>2</sub> <sup>1</sup> D <sub>8</sub> (OH)} <sub>2</sub> Tric.         a=20.80Å         α=90°0'           Sr <sub>2</sub> (B <sub>5</sub> O <sub>8</sub> (OH)) <sub>2</sub> B         Tric.         a=20.80Å         α=90°0'           (OH) <sub>3</sub> . H <sub>2</sub> O         A1         c=6.63Å         γ=91°57'           (OH) <sub>3</sub> . H <sub>2</sub> O         (Mn, Ca,Zn) <sub>5</sub> As <sub>4</sub> '         Mon.         a=18.015Å         β=96.238°         Mn <sub>1-III</sub> (4a)           (Na K, Ca) <sub>2</sub> (Si <sub>2</sub> Al <sub>2</sub> )         (Na, K, Ca) <sub>3</sub> (SO <sub>4</sub> )         Hex.         c=9.770Å         Si(6c) Al(6c)           (Na K, Ca) <sub>2</sub> (SO <sub>4</sub> ). 2H <sub>2</sub> O         (H <sub>2</sub> O) <sub>2</sub> (3∞){Si <sub>2</sub> Al <sub>2</sub> (SO <sub>2</sub> )}         Hex.         a=12.58Å         Z=1         Si(6c) Al(6c)           Ca <sub>2</sub> (SO <sub>4</sub> ). 2H <sub>2</sub> O         (H <sub>2</sub> O) <sub>2</sub> (3∞){Si <sub>2</sub> Al <sub>2</sub> (SO <sub>2</sub> ){Si <sub>2</sub> Al <sub>2</sub> (SO <sub>2</sub> )}         Mon.         a=5.81Å         β=97°19'           Ca <sub>5</sub> (ASO <sub>4</sub> ). 2H <sub>2</sub> O         P2./c         P2./c         C=2.7 7.5Å         Si (6c) Al(6c)					C=24.52A				303,301.180.,330,RAVV,047-
Sf <sub>2</sub> (B <sub>5</sub> C <sub>9</sub> (CH)) <sub>2</sub> B Sf <sub>2</sub> = 16 (CH) <sub>3</sub> Mon. (CH) <sub>3</sub> . H <sub>2</sub> O (CH) <sub>2</sub> (A <sub>5</sub> O <sub>4</sub> ) (Mn, Ca, Zn) <sub>5</sub> °As <sub>4</sub> ' Mon. (A <sub>5</sub> O <sub>3</sub> O <sub>4</sub> O <sub>4</sub> O <sub>4</sub> ) <sub>2</sub> (Mn, Ca, Zn) <sub>5</sub> °As <sub>4</sub> ' Mon. (A <sub>5</sub> O <sub>3</sub> O <sub>4</sub>			C. HOTTING	Mos	8 70 00	17000	(40)		Sov. Dhis Cost 1071 16 236.
Sr <sub>2</sub> (B <sub>2</sub> OH)) <sub>2</sub> B  Sr <sub>2</sub> (B <sub>2</sub> OH)) <sub>3</sub> B  Sr <sub>2</sub> (B <sub>2</sub> OH)) <sub>3</sub> B  E (Mn, Ca, Zn) <sub>5</sub> As <sub>4</sub>   Mon. a=18.015A β=90*48' c=6.63Å	VEATCHITE	Sr <sub>2</sub> (B <sub>5</sub> O <sub>8</sub> (OH)) <sub>2</sub> B	Sr <sub>2</sub> '''' 'B' (OH) <sub>3</sub>	Mon.	a=20.81A	β=92°1°	Of  -  (4a)		240:Higs.Ciyst., 1971, 10,230-
Sr <sub>2</sub> (B <sub>5</sub> C <sub>9</sub> (OH)) <sub>2</sub> B  Sr <sub>2</sub> (B <sub>5</sub> C <sub>9</sub> (OH)) <sub>2</sub> B  (OH) <sub>3</sub> .H <sub>2</sub> O  (Mn, Ca, Zn) <sub>5</sub> °As <sub>4</sub> '  (Mn, Ca, Zn) <sub>5</sub> (Sn) <sub>5</sub> (Sn) <sub>5</sub> (Sn) <sub>4</sub> (Sn) <sub>5</sub> (Sn) <sub>5</sub> (Sn) <sub>4</sub> (Sn) <sub>5</sub> (Sn) <sub>4</sub> (Sn) <sub>5</sub>		(OH)3.H <sub>2</sub> O	{2∞}[62.63.08(OH)]2	¥8	D=11./4A	4=7	DI-XI(44)		56 1034-1054-Dov 489-SP
Sr <sub>2</sub> (B <sub>5</sub> O <sub>8</sub> (OH)) <sub>2</sub> B  (OH) <sub>3</sub> . H <sub>2</sub> O  (Mn, Ca, Zn) <sub>5</sub> <sup>o</sup> As <sub>4</sub> <sup>t</sup> (Nn, Ca, Zn) <sub>5</sub> <sup>o</sup> As <sub>4</sub> <sup>t</sup> (Nn, Ca, Zn) <sub>5</sub> <sup>o</sup> As <sub>4</sub> <sup>t</sup> (Nn, Ca) <sub>5</sub> (Si <sub>5</sub> Al <sub>5</sub> )  (Na, K, Ca) <sub>5</sub> (Si <sub>5</sub> Al <sub>5</sub> )  (Na, K, Ca) <sub>5</sub> (Si <sub>5</sub> Al <sub>5</sub> )  (Na, K, Ca) <sub>5</sub> (Si <sub>5</sub> Al <sub>5</sub> )  (Na, K, Ca) <sub>5</sub> (So <sub>4</sub> ) 2H <sub>5</sub> O  (Ca <sub>5</sub> (ASO <sub>4</sub> ) 2H <sub>5</sub> O  (					7,0.0-0				37A,373-374;RRW,650.
(OH) <sub>3</sub> .H <sub>2</sub> O  E (Mn, Ca, Zn) <sub>5</sub> As <sub>4</sub> Mon. a=18.015 β=90°48' c=6.63Å γ=91°57' c=6.23° Mn <sub>1,III</sub> (4a) mon. α=18.015Å β=90°48' mn <sub>1,III</sub> (4a) mon. α=18.015Å β=90°48' mn <sub>1,III</sub> (4a) mon. α=18.016 β=90°48' mn <sub>1,III</sub> (4a) mon. α=18.016 β=90°48' mn <sub>1,III</sub> (4a) mon. α=18.019Å β=90°48' mn <sub>1,III</sub> (4a) mn <sub>1,III</sub> (4a) mon. α=18.019Å β=90°48' mn <sub>1,III</sub> (4a) mn <sub>1,III</sub> (4a) mon. α=18.019Å β=90°48' mn <sub>1,III</sub> (4a) mn <sub>1,III</sub> (4a	VEATCHITE - A	Sr,(B,O,(OH)),B		Tric.	a=20.80Å	α= <b>90</b> <sub>°</sub> 0,			Am.Min., 1979, 64, 362-366;
(Mn,Ca,Zn) <sub>5</sub> (Mn,Ca,Zn) <sub>5</sub> <sup>5</sup> As <sub>4</sub> Mon. a=18.015Å β=96.238 Mn <sub>1-lil</sub> (4a) (AsO <sub>3</sub> OH) <sub>2</sub> (AsO <sub>4</sub> ) <sub>2</sub> . [O <sub>14</sub> (OH) <sub>2</sub> (H <sub>2</sub> O) <sub>4</sub> ] Cc b=9.261Å Z=4 As <sub>1-lil</sub> (4a) 4H <sub>2</sub> O (≈Sainfeldite) Cc b=9.261Å Z=4 As <sub>1-lil</sub> (4a) (≈Sainfeldite) Cc c=9.770Å As <sub>1-lil</sub> (4a) (¬Sainfeldite) Cc c=9.711Å As <sub>1-lil</sub> (4a)		(OH) <sub>3</sub> .H <sub>2</sub> O		A1	b=11.72Å	β=90°48'			Hölzel,119.
(Mn.Ca,Zn) <sub>5</sub> (Mn, Ca,Zn) <sub>5</sub> dss <sub>4</sub>   Mon.         Mon.         a=18.015Å β=96.238 mn <sub>-lill</sub> (4a)         Mn <sub>-lill</sub> (4a)           (AsO <sub>2</sub> OH) <sub>2</sub> (AsO <sub>4</sub> ) <sub>2</sub> .         [O <sub>14</sub> (OH) <sub>2</sub> (H <sub>2</sub> O) <sub>4</sub> ]         Cc         b=9.261Å Z=4         As <sub>-lill</sub> (4a)         As <sub>-lill</sub> (4a)           4H <sub>2</sub> O         (≈Sainfeldite)         Hex.         a=12.58Å Z=1         Si(6c) Al(6c)           (Na,K,Ca) <sub>8</sub> (Si <sub>6</sub> Al <sub>8</sub> (O <sub>24</sub> )         Hex.         a=12.58Å Z=1         Si(6c) Al(6c)           O <sub>24</sub> (SO <sub>4</sub> ).2H <sub>2</sub> O         (H <sub>2</sub> O) <sub>2</sub> (3∞){Si <sub>6</sub> Al <sub>8</sub> (O <sub>24</sub> )         P6 <sub>3</sub> 2         c=5.11Å         O <sub>1-V</sub> (6c)           (asO <sub>4</sub> (AsO <sub>4</sub> ).2         (AsO <sub>2</sub> OH) <sub>2</sub> .5H <sub>2</sub> O         P2 <sub>-l</sub> /c         P2 <sub>-l</sub> /c         D-10.9Å         Z=3					c=6.63Å	γ=91°57' Z=4			
(ASO <sub>3</sub> OH)₂(ASO <sub>4</sub> )₂.         [O₁₄(OH)₂(H₂O)₃]         Cc         b=9.261Å         Z=4         As₁····(4a)           4H₂O         (≈Sainfeldite)         Hex.         c=9.770Å         si(6c) Al(6c)           (Na,K,Ca)₃(Si₀Ali₃(O₂₄)         Hex.         a=12.58Å         Z=1         Si(6c) Al(6c)           O₂₄(SO₃).2H₂O         (H₂O)₂(3∞){Si₀Ali₃(O₂₄)         P6₃₂         c=5.11Å         O₁··ν(6c)           Ca₂(ASO₃).2H₂O         (AsO₂OH)₂.5H₂O         P2₁/c         P2₁/c         p2₁/c           (AsO₃OH)₂.5H₂O         P2₁/c         Cancinite, Canci	VILLYAELLENITE	(Mn.Ca.Zn) <sub>5</sub>	(Mn,Ca,Zn) <sub>5</sub> <sup>o</sup> As <sub>4</sub>	Mon.	a=18.015Å	β=96.238			Am.Min., 1988, 73, 1172-1178;
4H₂O         (Na,K,Ca) <sub>8</sub> (Si <sub>8</sub> Al <sub>8</sub> )         (Na,K,Ca) <sub>8</sub> (Si <sub>8</sub> Al <sub>8</sub> O <sub>24</sub> )         Hex.         a=12.58Å         Z=1         Si(6c) Al(6c)           O₂4(SO <sub>4</sub> ).2H₂O         (H₂O)₂(3∞){Si <sub>8</sub> Al <sub>8</sub> O <sub>24</sub>           P6₃2         c=5.11Å         O₁⋅ν(6c)           (≈Cancrinite,Zeolite)         Mon.         a=5.81Å         β=97°19'           (AsO₃OH)₂.5H₂O         P2₁/C         C=2.7 7.4 Å		(ASO <sub>2</sub> OH) <sub>2</sub> (ASO <sub>4</sub> ) <sub>2.1</sub>	[O,4(OH),(H),]	ဗ	b=9.261Å	Z=4	-		Am.Min., 1986, 71, 1547 (Abs.);
(Na,K,Ca) <sub>8</sub> (Si <sub>8</sub> Al <sub>6</sub> )         (Na,K,Ca) <sub>8</sub> (SO <sub>4</sub> )         Hex.         a=12.58Å         Z=1         Si(6c) Al(6c)           O <sub>24</sub> (SO <sub>4</sub> ).2H <sub>2</sub> O         (H <sub>2</sub> O) <sub>2</sub> (3∞){Si <sub>8</sub> Al <sub>8</sub> O <sub>24</sub> ]         P6 <sub>3</sub> 2         c=5.11Å         O <sub>1-tV</sub> (6c)           ≈Cancrinite,Zeolite)         Mon.         a=5.81Å         β=97°19'           € (AsO <sub>3</sub> OH) <sub>2</sub> : 5H <sub>2</sub> O         P2 <sub>1</sub> /c         P2 <sub>1</sub> /c         c=2.7.74Å		4H20	(«Sainfeldite)		c=9.770Å				Encyc.Miner.Nam.,320.
O₂₄(SO₄).2H₂O         (H₂O)₂(3∞){Sie¹Ale²O₂₄          P6₃2         c=5.11Å         O₊ιν(8c)           (≈Cancrinite,Zeolite)         Mon.         a=5.81Å         β=97°19′           (AsO₃OH)₂.5H₂O         P2₁/c         P2₁/c         C=2.7.75Å		(Na,K,Ca) <sub>8</sub> (Si <sub>6</sub> Al <sub>6</sub> )	(Na,K,Ca) <sub>8</sub> (SO <sub>4</sub> )	Hex.	a=12.58Å		Si(6c) AI(6c)		RRW,654;Str.Tab.,482;Pov,
Ca <sub>5</sub> (ASO <sub>4</sub> ) <sub>2</sub> (ASO <sub>3</sub> OH) <sub>2</sub> .5H <sub>2</sub> O P2 <sub>4</sub> /c b=10.19Å Z=3 C=22.75Å		O <sub>24</sub> (SO <sub>4</sub> ).2H <sub>2</sub> O	(H <sub>2</sub> O) <sub>2</sub> {3∞}{Si <sub>6</sub> <sup>t</sup> Al6 <sup>t</sup> O <sub>2</sub> 4] (≈Cancrinite,Zeolite)	P6 <sub>3</sub> 2	c=5.11Å		O <sub>I-IV</sub> (6c)		764;Hölzel,240;LF,300.
	VLADIMIRITE	Ca <sub>5</sub> (AsO <sub>4</sub> ) <sub>2</sub>		Mon. P2./c	a=5.81Å	β=97°19'			339-Pov 520-Am Min 1965
		(ASC3CT)2.5T2C		2	c=22.75Å	2			50,813(Abs.).

NAME	CHEMICAL	STRUCTURAL FORMULA	SPACE GROUP	UNIT CELL DIMENSIONS	MENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
VOGLITE	Ca <sub>2</sub> Cu(UO <sub>2</sub> )(CO <sub>3</sub> ) <sub>4</sub> 6H <sub>2</sub> O		Mon. P2 <sub>1</sub>	a=25.97Å b=24.50Å c=10.70Å	β=104.0° Z=16			J.Appl.Cryst.,1979 <u>,12,</u> 616; Hölzel,109.
WALPURGITE	Bi <sub>4</sub> O <sub>4</sub> (UO <sub>2</sub> ) (AsO <sub>4)2</sub> .2H <sub>2</sub> O		Tric. P 1	a=7.135Å b=10.426Å c=5.494Å	$\alpha = 101.47^{\circ}$ $\beta = 110.82^{\circ}$ $\gamma = 88.20^{\circ}$ Z = 1			Min.Abs.,83M/1226;Am.Min., 1983, <u>68</u> ,852(Abs.);Pov.,524; Str.Tab.,350;RRW,661.
WERMLANDITE	CaMg <sub>7</sub> (AI,Fe) (SO <sub>4</sub> ) <sub>2</sub> (OH) <sub>18</sub> . 12H <sub>2</sub> O	Ca°Mg₁°(Al,Fe)°S₂¹ [O <sub>8</sub> (OH)₁8(H₂O)₁2] (≈Hydrocalumite)	Trig. P 3c1	a=9.303Å c=22.57Å	2=2	(Ca,Mg)(2b) (AI,Fe)(4d) S(4d) Mgi(2a) Mgilli(6f)		Zeit. Krist., 1984, 168, 133-144; Am. Min., 1972, <u>57</u> , 327 (Abs.); RRW, 667-668; Hölzel, 107; Pov., 764.
WILHELMVIER- LINGITE	CaMnFe(PO <sub>4</sub> ) <sub>2</sub> (OH).2H <sub>2</sub> O		Orth. Pbca	a=14.80Å b=18.50Å c=7.31Å	Z=8			K/B,157;Am.Min.,1984, <u>69</u> ,568 (Abs.);Hölzel,176.
YUKSPORITE	(K,Ba)NaCa <sub>2</sub> (Si,Ti) <sub>4</sub> O <sub>11</sub> (F,OH). H <sub>2</sub> O		Orth.	a=24.869Å b=16.756Å c=7.057Å	Z=3			Am.Min., 1986, <u>71,</u> 1547-1548 (Abs.);Hölzel, 224.
ZIPPEITE	K <sub>4</sub> (UO <sub>2</sub> )ε(SO <sub>4</sub> ) <sub>3</sub> (OH) <sub>10</sub> .4H <sub>2</sub> O		Mon C2/c	a=8.755Å b=13.987Å c=17.730Å	β=104.13° Z=2	β=104.13° K <sub>i-ll</sub> (8f) (occ. ½) Z=2 U <sub>i-ll</sub> (8f)		Can.Min., 1995,33,1091-1101; RRW,689;Pov.,602;Hölzel,138.
ZODACITE	Ca <sub>4</sub> MnFe <sub>4</sub> (PO <sub>4</sub> ) <sub>6</sub> (OH) <sub>4</sub> .12H <sub>2</sub> O	$(H_2O)_{12}Ca_4^{[8]}\{1\infty\}$ Mon. [Mn°Fe <sub>4</sub> °P <sub>6</sub> O <sub>24</sub> (OH) <sub>4</sub> ] C2/c (=Montgomeryite)	Mon. C2/c	a=10.152Å b=24.14Å c=6.308Å	β=91.14° Z=2			Am.Min.,1988 <u>,73</u> ,1179-1181; Min.Abs.,89M/2284;Hölzel, 176.
ZYKAITE	Fe <sub>4</sub> (AsO <sub>4</sub> ) <sub>3</sub> SO <sub>4</sub> (OH).15H <sub>2</sub> O		Orth.	a=20.85Å b=7.036Å c=37.01Å	Z=8			Am.Min.,1978, <u>63</u> ,1284(Abs.); Hölzel,169.

### $A_pB_qC_rD_sE_xF_yG_r.nAq.$

NAME	CHEMICAL	STRUCTURAL FORMULA	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
AËRINITE	Ca <sub>4</sub> (AI,Fe,Mg) <sub>10</sub> Si <sub>12</sub> O <sub>36</sub> (OH) <sub>12</sub> CO <sub>3</sub> . 12H <sub>2</sub> O		Mon.	a=14.690Å b=16.872Å c=5.170Å	β=94°45' Z=1			Am.Min.,1988 <u>,73</u> ,1498-1499 (Abs.);Hölzel,193.
ALBRECHT- SCHRAUFITE	Ca₄Mg(UO₂)₂ (CO₃)₅F₂.17H₂O		Pitc.	a=13.562Å b=13.406Å c=11.636Å	$\alpha$ =115.75° $\beta$ =107.66° $\gamma$ =92.86° Z=2			Acta Cryst.,1984, <u>A40,</u> C-247 (Abs.); Hölzel suppl
BAKERITE	Ca <sub>4</sub> B <sub>4</sub> (BO <sub>4</sub> )(SiO <sub>4</sub> ) <sub>3</sub> (OH) <sub>3</sub> .H <sub>2</sub> O	Ca₄(H₂O) {2∞}{B <sub>6</sub> 'Si₃¹O₁₂(OH)₃] (≈Datolite)	Mon. P2,/c	a=4.82Å b=7.60Å c=9.60Å	β=90°12' Z=1			Am.Min.,1962,47,919-923; Hölzel,193;RRW,47;Pov.,728, 437;Str.Tab.,383.
BURCKHARDTITE Pb <sub>2</sub> (Fe.Mn)Te (Si <sub>3</sub> Al)O <sub>12</sub> (OH) H <sub>2</sub> O	Pb <sub>2</sub> (Fe,Mn)Te (Si <sub>3</sub> Al)O <sub>12</sub> (OH) <sub>2</sub> . H <sub>2</sub> O		Mon. ?	a=5.21Å b=9.04Å c=12.85Å	β=90° Z=2			Am.Min.,1979, <u>64</u> ,355-358; Hölzel,237.
BYELORUSSITE - - (Ce)	NaBa <sub>2</sub> Ce <sub>2</sub> MnTi <sub>2</sub> Si <sub>8</sub> O <sub>26</sub> (F,OH).H <sub>2</sub> O		Orth. P2 <sub>1</sub> 2 <sub>1</sub> 2 <sub>1</sub>	a=10.57Å b=9.69Å c=22.38Å	Z=4			Am.Min.,1991 <u>,76</u> ,665-666 (Abs.);Hölzel suppl
	(Ca,Yb,Er) <sub>4</sub> Y <sub>4</sub> Si <sub>8</sub> O <sub>20</sub> (CO <sub>3</sub> ) <sub>6</sub> (OH). 7H <sub>2</sub> O	(Ca,Yb,Er), <sup>[8]</sup> Y, <sup>[8]</sup> (H <sub>2</sub> O),⁄(3∞){Sis,O <sub>20</sub> {g}[C <sup>1</sup> O <sub>3]s</sub> (OH)]	Orth. Ccm2 <sub>1</sub>	a=13.27Å b=13.91Å c=9.73Å	Z=2			SR <u>,44A</u> ,304;Hölzel,230;Am. Min.,1976 <u>,61</u> ,174-175.
CHALCOPHYLLI- TE	Cu <sub>9</sub> Al(AsO <sub>4)2</sub> (SO <sub>4</sub> ) <sub>1.5</sub> (OH) <sub>12</sub> . 18H <sub>2</sub> O	Cu <sub>9</sub> °Al°As <sub>2</sub> 'S <sub>1.5</sub> ' [O <sub>14</sub> (OH) <sub>12</sub> (H <sub>2</sub> O) <sub>18</sub> ]	Trig. R <sup>.3</sup>	a=10.756Å c=29.678Å Z=3	a <sub>R=</sub> 20.49Å α=30°40' Z <sub>R</sub> =1	Cu <sub>i</sub> (9d)Cu <sub>ii</sub> (18f) Al(3b) As(6c) S(6c)		Zeit.Krist.,1980, <u>151</u> ,129-140; Min.Abs.,80-4170;SR, <u>46A,</u> 341; Pov.,525;Str.Tab.,346;RRW, 119.
CHARLESITE	Ca <sub>6</sub> Al <sub>2</sub> (SO <sub>4</sub> ) <sub>2</sub> B (OH) <sub>4</sub> (OH,O) <sub>12</sub> . 26H <sub>2</sub> O	Ca <sub>6</sub> <sup>[3]</sup> (H <sub>2</sub> O) <sub>26</sub> {3∞}[Al <sub>2</sub> ° S <sub>2</sub> ¹B'O <sub>6</sub> (OH) <sub>4</sub> (OH,O) <sub>12</sub> ] (=Sturmanite)	Trig. P31c	a=11.16Å c=21.21Å	Z=2			Am.Min.,1983, <u>68</u> ,1033-1037; Hölzel,137.
DEMESMAEKERI- Te	Cu <sub>5</sub> Pb <sub>2</sub> (UO <sub>2)2</sub> (SeO <sub>3)6</sub> (OH) <sub>6</sub> .2H <sub>2</sub>	Pb <sub>2</sub> <sup>[9]</sup> (H <sub>2</sub> O) <sub>2</sub> {3∞}{Cu <sub>5</sub> <sup>8</sup> Se <sub>6</sub> <sup>(4)</sup> (U <sub>2</sub> <sup>[7)</sup> O <sub>22</sub> (OH) <sub>6</sub> ]	Tric. P <sup>.</sup> 1	a=11.955Å b=10.039Å c=5.639Å	$\alpha$ =89.78° $\beta$ =100.36° $\gamma$ =91.34° $Z$ =1	U(2i) Pb(2i) Se <sub>Lill</sub> (2i) Cu <sub>l</sub> (1h) Cu <sub>ll-III</sub> (2i)		Acta Cryst., 1986, <u>C39</u> , 824-827; Hölzel, 95; RRW, 168; Pov., 567; Str. Tab., 229; Bull. Min., 1965, <u>88</u> , 422-425.
ENGLISHITE	K <sub>3</sub> Na <sub>2</sub> Ca <sub>10</sub> Al <sub>15</sub> (PO <sub>4)21</sub> (OH) <sub>7</sub> . 26H <sub>2</sub> O				11.16			Can.Min.,1984, <u>22</u> ,469-470; Hölzel,174;Min.Mag.,1976, <u>40,</u> 863-866.
ERIONITE	K₂NaCa₁₅Mg	1(H <sub>2</sub> O) <sub>28</sub>	Hex. P6 <sub>3</sub> /mmc	a=13.26Å c=15.12Å	Z=1	Ca(2b) Si <sub>I-II</sub> (24I)		Bull.Min.,1969, <u>92,</u> 250-256;SR, <u>344,</u> 375;Am.Min.,1976, <u>61,</u> 853- 863;RRW,195;Pov.,358.
FRANÇOISITE - - (Nd)	(Nd,Y,Sm,Ce,Pr) (UO <sub>2)3</sub> (PO <sub>4)2</sub> O (OH).6H <sub>2</sub> O		Mon. P2 <sub>1</sub> /c	a=9.298Å b=15.605Å c=13.668Å	β=114°46′ Z=4			Min.Abs.,89M/2281;Hölzel, 182.
FRANSOLETITE	Ca <sub>3</sub> Be <sub>2</sub> (PO <sub>4)2</sub> (PO <sub>3</sub> OH) <sub>2</sub> .4H <sub>2</sub> O		Mon. P2 <sub>1</sub> /a	a=7.354Å b=15.07Å c=7.055Å	β=96.41° Z=2			Am.Min., 1985, <u>70</u> , 512(Abs.); K/B, 153; Hölzel, 159.

Kulture   Carte   Ca	NAME	CHEMICAL	STRUCTURAL FORMIII A	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT	STRUCTURE TYPE	REFERENCES
(NO.3); 6H; 0 Migr. 5c, Nr. 5c, Mr. 5c	HUMBERSTONI-	KaNa7Mq2(SQ4)k	K, [10] (H,O) (20) [Na-0	1	a=10.9055Å	a <sub>R</sub> =10.28Å	N(6c) S(18f)		Can.Min., 1994, 32, 381-385;
National	1	(NO <sub>3</sub> ), 6H <sub>2</sub> O	Mg, S, [N, TO ]		c=24.3949Å	α=64.0'	K(9e) Mg(3a)		Am.Min., 1970, 55, 1518-1533;
Mon.			Subs.d.Ungemachite		Z=3	Z <sub>R</sub> =1	Na <sub>(</sub> (6c)(v.occ.)		Pov.,600;Str.Tab.,298.
(\$C_3\()(CH) <sub>17.1</sub> 14H <sub>2</sub> O  Na_1Ba <sub>2</sub> CeFeNb <sub>2</sub> Si <sub>6</sub> CaMnFe <sub>2</sub> *Fe <sub>2</sub> *  (\$C_3\()(CH) <sub>17.1</sub> 14H <sub>2</sub> O  Na_1Ba <sub>2</sub> CeFeNb <sub>2</sub> Si <sub>6</sub> CaMnMnG <sub>2</sub> Fe <sub>2</sub> *  (\$C_3\()(CH) <sub>2</sub> H <sub>2</sub> CF <sub>1</sub> CP <sub>2</sub> CH <sub>2</sub> CH <sub>3</sub> O  (\$C_3\()(CH) <sub>2</sub> H <sub>2</sub> CH <sub>2</sub> CH <sub>3</sub> O  (\$C_3\()(CH) <sub>2</sub> H <sub>2</sub> CH <sub>2</sub> CH <sub>3</sub> O  (\$C_3\()(CH) <sub>2</sub> H <sub>2</sub> CH <sub>2</sub> CH <sub>3</sub> O  (\$C_3\()(CH) <sub>2</sub> H <sub>2</sub> CH <sub>2</sub> CH <sub>3</sub> O  (\$C_3\()(CH) <sub>2</sub> H <sub>2</sub> CH <sub>2</sub> CH <sub>3</sub> O  (\$C_3\()(CH) <sub>2</sub> H <sub>2</sub> CH <sub>2</sub> O  (\$C_3\()(CH) <sub>2</sub> H <sub>2</sub> CH <sub>3</sub> CH <sub>3</sub> O  (\$C_3\()(CH) <sub>2</sub> H <sub>2</sub> CH <sub>3</sub> O  (\$C_3\()(CH) <sub>2</sub> H <sub>2</sub> CH <sub>3</sub> O  (\$C_3\()(CH) <sub>2</sub> H <sub>2</sub> CH <sub>3</sub>	HYDROMBOBOM			Mon.	a=10.145Å	β=90.55°			Am.Min.,1982, <u>67</u> ,415-416
Na_Be_CGFeNb_Sib	KULITE	_		~	b=17.155A c=20.870Å	¿=Z			(ADS.).
CaMnFe <sub>2</sub> <sup>-7</sup> Fe <sub>3</sub> <sup>-7</sup>   Ca <sup>6</sup> Mn <sup>10</sup> Fe <sub>2</sub> <sup>-70</sup>   Mon.   C <sup>2</sup> 0.31Å   C <sup>2</sup> 0.30 <sup>10</sup> Mn <sup>10</sup> Fe <sub>2</sub> <sup>-70</sup> Fe <sub>1</sub> <sup>-1</sup>   Mon.   C <sup>2</sup> 0.30 <sup>10</sup> Mn <sup>10</sup> Fe <sub>2</sub> <sup>-70</sup> Fe <sub>2</sub>	ILIMAUSSITE -	Na, Ba, CeFeNb, Si		Hex	a=10.80Å	Z=3			Am.Min., 1969, 54, 992-993
CaMin(Bc) <sup>2</sup> Fe) <sup>2</sup> Ca <sup>0</sup> Min <sup>0</sup> Fe) <sup>2</sup> /Pe <sup>1</sup> Mon.         ?           (PO <sub>3</sub> <sub>3</sub> (OH) <sub>2</sub> , BP <sub>2</sub> O         Fe) <sup>2</sup> Fe) <sup>2</sup> Fe) <sup>2</sup> Mon.         a=14.94A β=110.16°         Fe)(2a) Fe <sub>1</sub> (2b)           Fe) <sup>2</sup> FO <sub>3</sub> <sub>3</sub> (OH) <sub>2</sub> Fe) <sup>2</sup> Fe) <sup>2</sup> Fe         Fe) <sup>2</sup> Fe         Mon.         a=14.94A β=110.16°         Fe <sub>1</sub> (2a) Fe <sub>1</sub> (2c)           Fe) <sup>2</sup> FO <sub>3</sub> <sub>3</sub> (OH) <sub>2</sub> Fe         Fe <sup>2</sup> Fe <sup>2</sup> Fe <sup>2</sup> Fe         Fe <sup>2</sup> Fe <sup>2</sup> Fe <sup>2</sup> Fe <sup>2</sup> Fe <sub>1</sub> (4e)         Ca <sup>0</sup> Min <sup>0</sup> Min <sup>2</sup> CaMin(Ma) Fe <sup>2</sup> Ga <sup>0</sup> Min <sup>0</sup> Min <sup>2</sup> Fe <sup>2</sup> F	- (Ce)	O <sub>28</sub> .5H <sub>2</sub> O		P6 <sub>3</sub> /mcm	c=20.31Å	) I			(Abs.); Pov., 368; Str. Tab., 401; RRW 297-298; Hölzel 198
(PO) <sub>4</sub> (O <sup>†</sup> I) <sub>2</sub> B <sup>†</sup> -C         (PO) <sub>4</sub> (O <sup>†</sup> I) <sub>2</sub> B <sup>†</sup> -C         ?         (PO) <sub>4</sub> (O <sup>†</sup> I) <sub>2</sub> B <sup>†</sup> -C         ?           CaMn(Mg, Fe) <sub>2</sub> (PO) <sub>4</sub> (O <sup>†</sup> (O†) <sub>2</sub> Fe <sub>2</sub> (P <sup>*</sup> P <sub>P</sub> <sup>1</sup> (Mg, Fe) <sub>2</sub> (Mg, Fe)	JAHNSITE -	CaMnFe,2*Fe,3*	CalisiMn <sup>[6]</sup> Fe,(2+) o	Mon	2				Hölzel,177;Min.Mag.,1978,42,
CaMn(Mg,Fe) <sub>2</sub> Cal <sup>m</sup> Mn <sup>el</sup> Mg,Fe) <sub>2</sub> Mon. Pca <sup>2</sup> Path         a=14.94A p=110.16° Fe <sub>1</sub> (2c)           Fe <sub>2</sub> <sup>20</sup> PO <sub>4</sub> J <sub>4</sub> (OH) <sub>2</sub> Cal <sup>m</sup> Mn <sup>el</sup> Mg,Fe) <sub>2</sub> P2a         D=7.14A Z=2         P <sub>1,0</sub> (4e)           SH <sub>2</sub> O         (aMniteite)         Cal <sup>m</sup> Mn <sup>el</sup> Mn <sup>2</sup> Mon. a=14.887A p=108.77°         P <sub>1,0</sub> (4e)           (aMniteite)         (aMniteite)         P2a         P2a         P2a           (aMniMn,Fe) <sup>2</sup> (aMniteite)         P2a         P2a         P2a           (bO <sub>4</sub> A(OH) <sub>2</sub> , 8H <sub>2</sub> O         Cal <sup>m</sup> Mn <sup>el</sup> Mn <sup>2</sup> P2a         P2a         P7 a=1.05A Z=2           (cal <sup>m</sup> Mn (SO <sub>4</sub> )(CO <sub>2</sub> )         (amniteite)         P5a         Path         Cal <sup>m</sup> Cal	- (CaMnFe)		Fe <sub>2</sub> (3+)0P <sub>4</sub> t IO-16(OH)2(H <sub>2</sub> O) <sub>8</sub> ]	<i>د</i>					309-323.
Page (POJJJ(CH)   Page   Pag	JAHNSITE -	1	Ca <sup>[6]</sup> Mn <sup>[6]</sup> (Mg,Fe) <sub>2</sub> °	Mon.		3=110.16	Fe <sub>1</sub> (2a) Fe <sub>11</sub> (2c)		Am.Min., 1974, 59, 964-973; Am.
CaMnMn, Fe 2 / (PO λ) (OH) 2 / (Hz O D)         Mon. (PO λ) (OH) 2 / (Hz O D)         main (SO D) (OH) 2 / (Hz O D)         Mon. (PO λ) (OH) 2 / (Hz O D)         main (SO D) (OH) 2 / (Hz O D)         Mon. (PO λ) (OH) 2 / (Az O D)         main (SO D) (Az O D)         Mon. (PO λ) (Az O D)         main (SO D) (Az O D)         Mon. (PO Δ) (Az O D)         main (SO D) (Az O D)         Mon. (PO D) (Az O D)         main (SO D)         Mon. (PO D) (Az O D)         main (SO D)         Mon. (PO D) (Az O D)         main (PO D)         Mon. (PO D) (Az O D)         main (PO D)         Mon. (PO (PO D)	-(Caming)		[O <sub>16</sub> (OH) <sub>2</sub> (H <sub>2</sub> O) <sub>8</sub> ]	B 77.	c=9.93Å	7-7	(p+)  -		RRW,308;SR,40A,248-249.
(PO <sub>4</sub> ) <sub>4</sub> (OH) <sub>2</sub> .8H <sub>2</sub> O   Fe <sub>2</sub> <sup>(379</sup> P <sub>1</sub> <sup>1</sup>   P2/a p=7.152Å Z=2   O <sub>16</sub> (OH) <sub>2</sub> (H <sub>2</sub> O) <sub>3</sub>   O <sub>16</sub> (OH) <sub>2</sub> (D <sub>2</sub> O <sub>3</sub>   O <sub>16</sub> (OH) <sub>3</sub>   O <sub>16</sub> (OH) <sub>2</sub>   O <sub>16</sub> (OH) <sub>3</sub>   O <sub>17</sub> (OH) <sub>6</sub>   D <sub>16</sub> (D <sub>2</sub> O <sub>3</sub>   O <sub>17</sub>   O <sub>17</sub> (OH) <sub>6</sub>   D <sub>16</sub> (D <sub>2</sub> O <sub>3</sub> O <sub>4</sub> O <sub>4</sub> O <sub>5</sub>   O <sub>17</sub>   O	JAHNSITE -	*	Ca <sup>[6]</sup> Mn <sup>[5]</sup> Mn <sub>2</sub> °	Mon.	a=14.887Å	β=109.77°			Am.Min., 1990, 75, 401-404;
Cas <sub>3</sub> Mn(SO <sub>4</sub> )(CO <sub>3</sub> )         Hex. a=11.06Å Z=2         Mn(Za) Ca(6c)           (OH) <sub>6</sub> .12H <sub>2</sub> O         P6 <sub>3</sub> c=10.50Å         Z=2         Mn(Za) Ca(6c)           (PAS)O <sub>4</sub> / <sub>2</sub> (OH) <sub>9</sub> Tric. a=10.98Å α=95.1°         S(2b) C(2b)           (PAS)O <sub>4</sub> / <sub>2</sub> (OH) <sub>9</sub> Tric. a=10.98Å α=95.1°         P1 b=15.96Å β=90.1°           (PAS)O <sub>4</sub> / <sub>2</sub> (OH) <sub>9</sub> Tric. a=6.84Å Z=1         Z=2           HCa <sub>4</sub> Mg <sub>2</sub> Al <sub>4</sub> (SO <sub>4</sub> )e         7         c=28.01Å β=91.48°           CuPb <sub>3</sub> (CrO <sub>4</sub> )SiO <sub>3</sub> Mon. a=20.81Å β=91.48°         c=9.28Å           CuPh <sub>3</sub> (CrO <sub>4</sub> )SiO <sub>3</sub> Mon. a=10.409Å Z=4         c=12.312Å           (OH) <sub>4</sub> .2H <sub>2</sub> O         Pbca         p=10.408Å Z=4           (OH) <sub>3</sub> .15H <sub>2</sub> O         Tric. a=13.50Å α=90°           (AsO <sub>3</sub> OH) <sub>4</sub> .4H <sub>2</sub> O         P1 b=14.10Å β=92°           (PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>12</sub> .8H <sub>2</sub> O         Mon. ?           Ca5Fe <sub>2</sub> Mo <sub>2</sub> O <sub>1</sub> O         P1 P14.10Å β=92°	- (CaMnMn)	O. H	Fe <sub>2</sub> <sup>(3+%</sup> P <sub>4</sub> <sup>t</sup> [O <sub>16</sub> (OH) <sub>2</sub> (H <sub>2</sub> O) <sub>8</sub> ]	P2/a	b=7.152Å c=9.966Å	Z=2			Hölzel suppl
(OH) <sub>6</sub> ·12H <sub>2</sub> O   (P.As)O <sub>4</sub> ) <sub>2</sub> (OH) <sub>6</sub>   (P.As)O <sub>4</sub> O <sub>4</sub> O <sub>4</sub> O <sub>5</sub>   (P.As)O <sub>4</sub> O <sub>4</sub> O <sub>5</sub>   (P.As)O <sub>4</sub> O <sub>4</sub> O <sub>6</sub>   (P.As)O <sub>4</sub> O <sub>4</sub> O <sub>6</sub>   (P.As)O <sub>4</sub> O <sub>4</sub> O <sub>6</sub>   (P.As)O <sub>6</sub> O <sub>6</sub>	JOURAVSKITE	Ca <sub>3</sub> Mn(SO <sub>4</sub> )(CO <sub>3</sub> )		Hex.	a=11.06Å	Z=2	Mn(2a) Ca(6c)		Acta Cryst., 1969, B25, 1943-
PbAI(UO <sub>2</sub> ) <sub>5</sub> ((PAS)Q <sub>4</sub> ) <sub>2</sub> (OH) <sub>9</sub> ((PAS)Q <sub>4</sub> ) <sub>2</sub> (OH) <sub>2</sub> ((PAS)Q <sub>4</sub> ) <sub>3</sub> ((PAS)Q <sub>4</sub> ) <sub>4</sub> ((PAS)Q <sub>4</sub> ) <sub>5</sub> ((PAS)Q <sub>4</sub> ) <sub>6</sub> ((PAS)Q <sub>4</sub>		(OH) <sub>6</sub> .12H <sub>2</sub> O		P63 .:	c=10.50Å		S(2b) C(2b)		1951;SR,34A,313-314;Bull.
PbAI(UO <sub>2</sub> ) <sub>5</sub> Tric.       a=10.98Å       α=95.1°         (P-As)O <sub>4</sub> ) <sub>2</sub> (OH) <sub>9</sub> Tric.       b=15.96Å       α=95.1°         (P-As)O <sub>4</sub> ) <sub>2</sub> (OH) <sub>9</sub> Tric.       b=15.96Å       α=95.1°         (P-As)O <sub>4</sub> ) <sub>2</sub> (OH) <sub>2</sub> Tric.       a=6.84Å       Z=1         HCa <sub>4</sub> Mg <sub>2</sub> AI <sub>4</sub> (SO <sub>4</sub> ) <sub>6</sub> Tric.       a=6.84Å       Z=1         CuPb <sub>2</sub> (CrO <sub>4</sub> )SiO <sub>3</sub> Mon.       a=20.81Å       Z=4         CuPb <sub>2</sub> (CrO <sub>4</sub> )SiO <sub>3</sub> C2/m       a=20.84Å       Z=4         CH) <sub>3</sub> .15H <sub>2</sub> O       Orth.       a=10.409Å       Z=4         CHO <sub>3</sub> .15H <sub>2</sub> O       Orth.       a=13.50Å       α=95.14         CaFe <sub>2</sub> Mo <sub>2</sub> O <sub>10</sub> P1       b=14.10Å       p=92.2         CAFe <sub>2</sub> Mo <sub>3</sub> O <sub>10</sub> P1       b=14.10Å       p=22         CAFe <sub>2</sub> Mo <sub>3</sub> O <sub>10</sub> 7       c=6.95Å       γ=119°									Min., 1965, 88, 254-262; Pov.,
PbAI(UO₂)s       Tric.       a=10.98Å       α=95.1°         ((P.As)O₄)₂(OH)s       P1       b=15.96Å       β=96.1°         .9.5H₂O       C=9.088Å       γ=89.0°         Es,32H₂O       7       c=28.01Å         E (OH)₄.2H₂O       Mon.       a=6.84Å       Z=1         E (OH)₄.2H₂O       Mon.       a=6.84Å       Z=4         C2/m       b=5.84Å       Z=4         C2/m       b=5.84Å       Z=4         COH)₃.15H₂O       Orth.       a=10.409Å       Z=4         (OH)₃.15H₂O       Pbca       c=12.312Å         NaCas(AsO₃)       P1       b=14.10Å       β=92°         (AsO₃OH)₄.4H₂O       P1       b=14.10Å       β=92°         (PO₄)₂(OH)₂.8H₂O       7       c=6.95Å       γ=119°         (PO₄)₂(OH)₂.8H₂O       7       c=6.95Å       γ=119°									600-601;Str.Tab.,297;RRW,
Part(UC)2)5	THE CLITICAL V			ŀ	8 00 07	77.00			Am Min 1085 70 427/Abs ):
HCa <sub>4</sub> Mg <sub>2</sub> Al <sub>4</sub> (SO <sub>4</sub> ) <sub>6</sub>   Tet.   a=6.84Å   Z=1   Z=2   Z=2   Z=2   Z=2   Z=2   Z=2   Z=2   Z=1	NAMII UGAITE	(P AS)O <sub>3</sub> ) <sub>2</sub> (OH) <sub>2</sub>		- <u>7</u>	a=10.98A h=15.98Å	α=95.1°			Hölzel 182:K/B.175.
HCa <sub>4</sub> Mg <sub>2</sub> Al <sub>4</sub> (SO <sub>4</sub> ) <sub>8</sub> Tet.         a=6.84A Z=1           F <sub>9.32H<sub>2</sub>O</sub> γ         c=28.01Å         Z=1           FP <sub>3.32H<sub>2</sub>O</sub> Mon.         a=20.81Å B=91*48°         C           (OH) <sub>4.2H<sub>2</sub>O</sub> Mon.         a=20.81Å Z=4         C           FE         COHD <sub>3</sub> -2H <sub>2</sub> O         COTh.         a=10.409Å Z=4         C           FE         COHD <sub>3</sub> -15H <sub>2</sub> O         Orth.         a=10.409Å Z=4         D           NaCa <sub>5</sub> (AsO <sub>4</sub> )         Pbca         D=20.330Å         C=12.312Å         D           (ASO <sub>3</sub> OH) <sub>4.4</sub> H <sub>2</sub> O         F1         b=14.10Å         p=92°           (ASO <sub>3</sub> OH) <sub>4.4</sub> H <sub>2</sub> O         P1         b=14.10Å         p=92°           CaFe <sub>2</sub> Mo <sub>2</sub> OH) <sub>12.2</sub> BH <sub>2</sub> O         Mon.         ?		.9.5H <sub>2</sub> O		:	c=9.068Å	γ=89.0° 7=2			
F <sub>9.3</sub> 2H <sub>2</sub> O         γ         c=28.01Å           TE         CuPb <sub>3</sub> (CrO <sub>4</sub> )SiO <sub>3</sub> Mon.         a=20.81Å         β=91°48°           (OH) <sub>4.</sub> 2H <sub>2</sub> O         C2/m         b=5.84Å         Z=4           CH) <sub>4.</sub> 2H <sub>2</sub> O         C2/m         b=5.84Å         Z=4           CH) <sub>3.</sub> 15H <sub>2</sub> O         Orth.         a=10.409Å         Z=4           Pbca         Dcana         D=20.330Å         D=20.330Å           NaCa <sub>5</sub> (AsO <sub>4</sub> )         Tric.         a=13.50Å         α=90°           (AsO <sub>3</sub> OH) <sub>4.4</sub> H <sub>2</sub> O         P1         b=14.10Å         β=92°           CaFe <sub>2</sub> Mo <sub>5</sub> O <sub>10</sub> Mon.         ?           Ro <sub>2</sub> (PO) <sub>2</sub> (OH) <sub>12.8</sub> H <sub>2</sub> O         Mon.           P         Parameter         Parameter	LANNONITE	HCa <sub>4</sub> Mq <sub>2</sub> AI <sub>4</sub> (SO <sub>4</sub> ) <sub>8</sub>		Tet.	a=6.84Å	Z=1			Min.Mag.,1983,47,37-40;
TTE         CuPb <sub>3</sub> (CrO <sub>4</sub> )SiO <sub>3</sub> Mon.         a=20.81Å β=91°48'           (OH) <sub>4</sub> .2H <sub>2</sub> O         C2/m         b=5.84Å Z=4           (OH) <sub>4</sub> .2H <sub>2</sub> O         Orth.         a=10.409Å Z=4           (OH) <sub>3</sub> .15H <sub>2</sub> O         Pbca         b=20.330Å           NaCa <sub>5</sub> (AsO <sub>4</sub> )         Tric.         a=13.50Å α=90°           (AsO <sub>3</sub> OH) <sub>4</sub> .4H <sub>2</sub> O         P1         b=14.10Å β=92°           (PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>12</sub> .8H <sub>2</sub> O         Mon.         ?		F <sub>9</sub> .32H <sub>2</sub> O		۲	c=28.01Å				Hölzel,137.
(OH)4.2H <sub>2</sub> O         C2/m         b=5.84Å         Z=4           FE         KMg <sub>2</sub> Al <sub>2</sub> Ti(PO <sub>4</sub> ) <sub>4</sub> Orth.         a=10.409Å         Z=4           (OH)3.15H <sub>2</sub> O         Orth.         a=10.409Å         Z=4           NaCa <sub>5</sub> (AsO <sub>4</sub> )         Pbca         b=20.330Å           (AsO <sub>3</sub> OH) <sub>4.4</sub> H <sub>2</sub> O         Tric.         a=13.50Å         α=90°           (AsO <sub>3</sub> OH) <sub>4.4</sub> H <sub>2</sub> O         P1         b=14.10Å         β=92°           (PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>12.2</sub> BH <sub>2</sub> O         Mon.         ?         ?	MACQUARTITE	CuPb <sub>3</sub> (CrO <sub>4</sub> )SiO <sub>3</sub>		Mon.	a=20.81Å	β=91°48'			Am.Min.,1981,66,638(Abs.);
TTE         KMg₂Al₂Ti(PO₄)₄         Orth.         a=10.409Å         Z=4           (OH)₃.15H₂O         Pbca         b=20.330Å         Z=4           NaCas(AsO₄)         Tric.         a=13.50Å         α=90°           (AsO₃OH)₄.4H₂O         P1         b=14.10Å         β=92°           CaFe₂Mo₅O₁₀         CaFe₂Mo₅O₁₀         Z=2           (PO₄)₂(OH)₁₂.8H₂O         ?		(OH) <sub>4</sub> .2H <sub>2</sub> O		C2/m	b=5.84Å c=9.26Å	Z=4			Hölzel,139.
(OH) <sub>3</sub> .15H <sub>2</sub> O  NaCa <sub>5</sub> (AsO <sub>4</sub> )  (AsO <sub>3</sub> OH) <sub>4</sub> .4H <sub>2</sub> O  CaFe <sub>2</sub> Mo <sub>5</sub> O <sub>10</sub> CaFe <sub>2</sub> Mo <sub>5</sub> O <sub>10</sub> (Po <sub>4</sub> <sub>2</sub> (OH) <sub>12</sub> .8H <sub>2</sub> O)	MANTIENNEITE	KMg <sub>2</sub> Al <sub>2</sub> Ti(PO <sub>4</sub> ) <sub>4</sub>		Orth.	a=10.409Å	Z=4			Am.Min.,1985,70,1330(Abs.);
NaCa <sub>5</sub> (AsO <sub>4</sub> )       Tric.       a=13.50Å       α=90°         (AsO <sub>3</sub> OH) <sub>4</sub> .4H <sub>2</sub> O       P1       b=14.10Å       β=92°         c=6.95Å       γ=119°         caFe <sub>2</sub> Mo <sub>5</sub> O <sub>10</sub> Z=2         (PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>12</sub> .8H <sub>2</sub> O       γ		(OH) <sub>3</sub> .15H <sub>2</sub> O		Pbca	b=20.330A c=12.312Å				Hölzel,173;K/B,154.
(AsO <sub>3</sub> OH) <sub>4.4</sub> H <sub>2</sub> O P1 b=14.10Å β=92° c=6.95Å γ=119° c=6.95Å γ=119° Ann. ? Z=2 Mo <sub>3</sub> (OH) <sub>12</sub> .8H <sub>2</sub> O ? ?	MCNEARITE	NaCa <sub>5</sub> (AsO <sub>4</sub> )		Tric.	a=13.50Å	α=90°			Am.Min., 1982, 67,856 (Abs.);
CaFe <sub>2</sub> Mo <sub>5</sub> O <sub>10</sub>		(AsO <sub>3</sub> OH) <sub>4</sub> .4H <sub>2</sub> O		<u>F</u> :	b=14.10Å	β=92°			Hölzel,165.
CaFe <sub>2</sub> Mo <sub>5</sub> O <sub>10</sub> Mon. ? (PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>12</sub> :8H <sub>2</sub> O ?					c=6.95A	γ=119° Z=2			
	MELKOVITE	CaFe <sub>2</sub> Mo <sub>5</sub> O <sub>10</sub> (PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>12</sub> .8H <sub>2</sub> O		Mon.	٤				Am.Min.,1970, <u>55</u> ,320(Abs.); Hölzel,178;RRW,390;K/B,191.

	CHEMICAL	STRUCTURAL	SPACE	ONCIONATION I INC.	OIACLO LOTA	EQUIVALENT	CTDICTIBE TVDE	OH CANADANA
NAME	FORMULA	FORMULA	GROUP	ONII CELL DI	MENSIONS	POSITIONS		
MORINITE	NaCa <sub>2</sub> Al <sub>2</sub> (PO <sub>4</sub> ) <sub>2</sub>	(H <sub>2</sub> O) <sub>2</sub> (3∞)[ Ca <sub>2</sub> <sup>[8]</sup>	Mon.	a=9.454Å	β=105.46°	Ca(4f) Al(4f)		Can.Min., 1979, 17, 93-102; Am.
	(OH)F4.2H2O	Na <sup>(5by)</sup> {g}[Al <sub>2</sub> °P <sub>2</sub> ¹O <sub>8</sub>	P2 <sub>1</sub> /m	b=10.692Å	Z=2	Na(2e) P <sub>I-II</sub> (2e)		Min., 1958, 43, 585-594; SR, 44A, 247-248; K/B. 64-65; Pov., 550.
AILOVEI AL LIMITE	(Ali Cu) IA(I (C)	(4.1)	Mon	2-10 1758	A=05 050			Am Min. 1982 67 415-416
MICHELALOMIE	(NO <sub>3</sub> ) <sub>2</sub> (OH) <sub>12</sub> .3H <sub>2</sub> O			b=8.860Å	Z=4			(Abs.);Hölzel,136:K/B,154.
				C=17.174A	,			A A Sin 4005 70 075 (A bo ):
PAULKERRITE	K(Mg,Mn) <sub>2</sub> Ti		Pod Pod Pod	a=10.49A b=20.75Å	7=4			Am.min.,1965, <u>/U</u> ,675(Abs.);   Hölzel,173.
	(OH)3.15H2O			c=12.44Å				
PEISLEYITE	Na <sub>3</sub> Al <sub>16</sub> (PO <sub>4</sub> ) <sub>10</sub>		Mon.	a=13.31Å	β=11.0°			Am.Min., 1983, 68,849-850
	(SO <sub>4</sub> ) <sub>2</sub> (OH) <sub>17</sub>   20H <sub>2</sub> O		~	b=12.62A c=23.14Å	Z=2			(ADS.);K/B,1/6;H0lZel,1/3.
PERHAMITE	Ca <sub>3</sub> Al <sub>7</sub> (SiO <sub>4</sub> ) <sub>3</sub>		Hex.	a=7.02Å	Z=1			Min.Mag.,1977,41,437-442;
	(PO <sub>4</sub> ) <sub>4</sub> (OH) <sub>3</sub> 16 5H <sub>2</sub> O		P6/mmm	c=20.21A				Hölzel,241.
PICROPHARMA-	Ca4Mg(AsO <sub>3</sub> OH) <sub>2</sub>	(H <sub>2</sub> O) <sub>11</sub> Ca <sub>4</sub> <sup>[6/7]</sup> {2∞}	Tric.	a=13.547Å	α=99.85°	As <sub>I-IV</sub> (2i) Mg(2i)		Am.Min., 1981, 66, 385-391; Am.
COLITE	(AsO <sub>4</sub> ) <sub>2</sub> .11H <sub>2</sub> O	[Mg°As4O14(OH)2]	٦-	b=13.500Å	β=96.41°	Ca <sub>I-IV</sub> (2i)		Min., 1976, 61, 326-328; Pov.,
-		(≈Guerinite)		c=6.710Å	γ=91.60° Z=2			515;Sfr. I ab., 337;H0izei, 164.
PLANERITE	Al <sub>6</sub> (PO <sub>4</sub> ) <sub>2</sub> (PO <sub>3</sub> OH) <sub>2</sub>		Tric.	a=7.70Å	$\alpha = 110°50°$			Hölzel suppl
	(OH) <sub>8</sub> .4H <sub>2</sub> O		P 1?	b=10.109Å	β=115°4'			
				c=7.390Å	γ=70°46' Z=1?			
POTTSITE	PbBi(VO <sub>4</sub> )		Tet.	a=11.084Å	Z=10			Min.Mag.,1988, <u>52</u> ,389-390;
	(VO3OH).ZH2O		14122	C+12.03+7				Dov. 626-DDM 607-64-Tob
RABBITTITE	Ca <sub>3</sub> Mg <sub>3</sub> (UO <sub>2</sub> ) <sub>2</sub>		Mon.	a=32.6A	β=90°			Pov.,625;KKW,507;Str. I ab.,
	(CO <sub>3</sub> )6(On)4. 18n <sub>2</sub> O		r 24/a :	c=9.45Å	0			Nam.,251;Am.Min.,1955,40,
								201-206.
RANUNCULITE	AI(UO <sub>2</sub> )(PO <sub>3</sub> OH)		Mon.	a=11.1Å	β≈90°			Min.Mag., 1979, 43, 321-323;
	(OH) <sub>3</sub> .4H <sub>2</sub> O		<b>~</b>	b=17.7A c=18.0Å	Z=14			H0lzel, 182;NB, 101.
RICHEI SDORFI-	Ca,Cu,Sb(AsO <sub>4</sub> ) <sub>4</sub>	(HoO) (Spo) (Spo) (OH)	Mon.	a=14.079Å	B=101.05°	Cu <sub>1</sub> (4i) Cu <sub>11-111</sub> (8j)		Zeit.Krist., 1987, <u>179</u> , 323-334;
12		{2∞}{Ca₂ <sup>[f]</sup> Cu₅ <sup>[5]</sup> Cl (As¹O₄)₄](≈Whiteite)	C2/m	b=14.203Å c=13.470Å		Ca(8j) Sb(4f)		Am.Min.,1984, <u>69</u> ,211(Abs.).
RITTMANNITE				a=15.01Å	$\beta = 112.82^{\circ}$			Can.Min., 1989, <u>27</u> , 447-449;
	(Fe,Mn,Mg) <sub>2</sub> (Al,Fe) <sub>2</sub> (PO <sub>4</sub> ) <sub>4</sub>		P.Z/a	b=6.89A c=10.16Å	7=7			noizei suppi:
	(OH) <sub>2</sub> .8H <sub>2</sub> O			3 1 1	17 0010			Min Abs 78/2308: Am Min
ROSCHERITE (Monoclinic)	Ca(Mg,Fe) <sub>2</sub> Be <sub>2</sub> Al <sub>x</sub> (PO <sub>4</sub> ) <sub>3</sub> (OH) <sub>3</sub> .2H <sub>2</sub> O	(H₂O)₂Ca'¹ (3∞}[(Mg,Fe)₂°Be₂Alx°	Mon. C2/c	a=15.874A b=11.854Å	β=95°34° Z=4			1958,43,824-838;SR,43A,248;
		P <sub>3</sub> 'O <sub>12</sub> (OH) <sub>3</sub> ]		c=6.605A				K/B,13/-138;P0V.,551.

(H-O)/Ca <sup>(1</sup> (Sa) Mn <sup>2</sup> Tric. a=15.921A a=91°4′  Fe <sup>(1</sup> (Ba)-P <sub>1</sub> (Sa)-P <sub>1</sub> (Mn) <sup>2</sup> Tric. a=7.767A a=92.95°5′  Co <sup>(1</sup> (H <sub>2</sub> O)/(Sa)-P <sub>1</sub> (Cu)-P <sub>1</sub> (Mn) <sup>2</sup> Tric. a=7.767A a=92.96° Cu(2) C(2))  Co <sup>(1</sup> (Cu)-P <sub>1</sub> (Mn) <sup>2</sup> Tric. a=7.767A a=92.96° Cu(2) C(2))  Fe <sup>(1</sup> (Ba)-P <sub>2</sub> (Sa)-P <sub>2</sub> (Mn) Tric. a=7.767A a=92.96° Cu(2) C(2))  Fe <sup>(2</sup> (Sa)-P <sub>2</sub> (Mn) Tric. a=7.787A a=92.96° Cu(2) C(2))  Fe <sup>(2</sup> (Sa)-P <sub>2</sub> (Mn) Tric. a=7.787A a=92.96° Cu(2) C(2))  Fe <sup>(2</sup> (Sa)-P <sub>2</sub> (Mn) Tric. a=7.787A a=92.96° Cu(2) C(2))  Fe <sup>(2</sup> (Sa)-P <sub>2</sub> (Mn) Tric. a=17.92A p=10.5° Mg(2c) Si(4) Ca)-P <sub>2</sub> (Mn)  Fe <sup>(2</sup> (Sa)-P <sub>2</sub> (Mn) Tric. a=17.93A b=103.2° Cu(3) Cu(3) Cu(4)	NAME	CHEMICAL	STRUCTURAL	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
(PO) <sub>2</sub> (OH) <sub>2</sub> : 34-O         Fe, Fe, Po, Po, CH) <sub>3</sub> C i         De 11.966A         β=96959           Cu <sub>2</sub> O <sub>2</sub> (UO) <sub>3</sub> (CH) <sub>2</sub> : 34-O         Fe, Fe, Po, Po, CH) <sub>3</sub> Tric         p=17.87A         q=27.16*         U(13) U(2)           Cu <sub>2</sub> O <sub>2</sub> (UO) <sub>3</sub> (CO) <sub>3</sub> (H-Q) <sub>2</sub> (CH) <sub>3</sub> Tric         p=5.246         p=0.89         Cu(13) C(2)           (UO) <sub>3</sub> (CO) <sub>3</sub> (CH) <sub>2</sub> P.         p=2.08A         p=0.89         Cu(13) C(2)           (UO) <sub>3</sub> (CO) <sub>3</sub> (CH) <sub>2</sub> P.         p=2.08A         p=0.89         Cu(13) C(2)           (UO) <sub>3</sub> (CO) <sub>3</sub> (CH) <sub>2</sub> Mon.         a=9.208A         p=0.89         Cu(2)           (UO) <sub>3</sub> (CO) <sub>3</sub> (H-Q)         Mon.         a=17.382A         p=10.59         U(41) O <sub>1,4</sub> (41)           (SO) <sub>3</sub> (H-Q)         Mon.         a=17.382A         p=10.32         U(41) O <sub>1,4</sub> (41)           (SO) <sub>4</sub> (H-Q) <sub>4</sub> (H-Q)         Mon.         a=17.382A         p=10.32         U(41) O <sub>1,4</sub> (41)           (No.O <sub>4</sub> , 15H-O         P.         P.         p=1.335A         p=10.32         P=1.03           (No.O <sub>4</sub> , 15H-O         P.         P.         p=1.35AA         Z=2         U(41) O <sub>1,4</sub> (41)           (SO) <sub>4</sub> (C,OH) <sub>2</sub> (No.O <sub>4</sub> , 15H-O         P.         P.         P.         P.         P.         P.	ROSCHERITE	CaBe,Mn,Fe,	(H,O),Ca <sup>[7]</sup> (3m)IMn,°	Tric	a=15.921Å	α=91°4′			Am.Min.,1978,63,427(Abs.);
Curociuo)3(Co2); (H-O)4(3e)[Cu2 <sup>3</sup> U3 <sup>4</sup> M <sup>2</sup> Tric. a=7.787A	(Triclinic)	(PO <sub>4</sub> ) <sub>3</sub> (OH) <sub>2</sub> .3H <sub>2</sub> O	Fe, Be, P3 O12 (OH)2]	٥ 1	b=11.965Å	β=94°21'			SR,43A,248;K/B,138;Str.Tab.,
Cu <sub>2</sub> O <sub>2</sub> (UO <sub>3</sub> ) <sub>2</sub> (CO <sub>3</sub> )         (H <sub>2</sub> O) <sub>2</sub> (UO <sub>3</sub> )         (H <sub>2</sub> O) <sub>3</sub> (UO <sub>3</sub> )<					c=6.741Å	γ=89°59'			340.
Ca(Nd(Sm,Y) <sub>2</sub>   Ca(N	ROLIBALLI TITE	(-00)-(-01)-0-110	[8/] 1 1 <sub>0</sub> 11 J1 C C T	Tric	a=7 7.67 Å	×=02 16°	11/(1a) (1 <sub>1</sub> /2i)		Acta Cryst 1985 C41 654-657
Cal(Md Sm. Y) <sub>2</sub>		OH) 4HO	C. C	۵ ۱ <del>۲</del>	h=6 024 Å	8=00 80e	Ci(2) C(2)		Bull Min. 1970.93.550-554: Am.
Car(Nd, Sm, Y),		021 F :2(10)	02 014(01)2]	-	0-0.9247	D-90.09	0. (2)		Min. 1972.57.1912(Abs.): Pov.
Ca(Nu(Sm, V) <sub>2</sub>   Won.   a=9.208A   p=90.3°   U(a)(cO <sub>2</sub> ) <sub>4</sub> (OH) <sub>2</sub>   P2   a=17.382A   p=105.9°   Wg(2c) Si(4i)   P2   p=22.09A   Z=5   O <sub>2</sub> (0H) O <sub>2</sub> (v(4i)   D=17.047A   Z=2   O <sub>2</sub> (0H) O <sub>2</sub> (v(4i)   O <sub>2</sub> (v(					C000.	Z=1	(1-14-1)		327;RRW,528.
(UC <sub>2</sub> )(CO <sub>2</sub> ) <sub>4</sub> (OH) <sub>2</sub>   P2   P2   P2.2.08Å Z=5   E (H <sub>2</sub> O) <sub>2</sub> Mg(UC <sub>2</sub> ) <sub>2</sub>   CO <sub>2</sub> Mg(UC <sub>2</sub> ) <sub>3</sub>   CO <sub>2</sub> Mg(UC <sub>2</sub> ) <sub>4</sub>   CO <sub>2</sub> Mg(UC <sub>2</sub> ) <sub>4</sub>	SHABAITE - (Nd)	Ca(Nd,Sm,Y)2		Mon.	a=9.208Å	β=90.3°			Am.Min.,1990, <u>75</u> ,433-434
E (H-5O)2Mg(UO2)2		(UO <sub>2</sub> )(CO <sub>3</sub> ) <sub>4</sub> (OH) <sub>2</sub>		P2	b=32.09Å	Z=2			(Abs.);Hölzel,110;Eur.J.Min., 1989 1 85-88
SiO <sub>4</sub> /j <sub>2</sub> -4H <sub>2</sub> O	SKLODOWSKITE	(H <sub>3</sub> O),Mq(UO <sub>2</sub> ),		Mon.	a=17.382Å	B=105.9°	Mg(2c) Si(4i)		SR,43A,323-324, <u>27</u> ,710-711;
Na <sub>2</sub> CaFe <sub>2</sub> " (As <sub>2</sub> O <sub>4</sub> )		(SiO <sub>4</sub> ) <sub>2</sub> .4H <sub>2</sub> O		C2/m	b=7.047Å	Z=2	U(4i) O <sub>I-IV</sub> (4i)		Pov.,455;Str.Tab.,385;Am.Min.
Na <sub>2</sub> CaFe <sub>2</sub> <sup>2</sup> (As <sub>2</sub> O <sub>4</sub> )					c=6.610Å		O <sub>v</sub> (8j)		,1981, <u>66</u> ,610-625;Hölzel,195.
(NaCA) <sub>0</sub> -15H <sub>2</sub> O	SODIUM	Na <sub>2</sub> CaFe <sub>2</sub> <sup>3+</sup> (As <sub>2</sub> O <sub>4</sub> )		Mon.	a=11.28Å	β=94°30′			Am.Min., 1972, 57, 312-313
(Na, Fe), Ray Fe), Ba <sub>2</sub> Sr <sub>2</sub> Tr <sub>2</sub> (Na, Fe), Ba <sub>2</sub> Sr <sub>2</sub> Tr <sub>2</sub> (Na), Pa <sub>2</sub> Sr <sub>2</sub> (N	BETPAKDALITE	(MoO₄)6.15H <sub>2</sub> O		<i>د</i>	b=19.30A c=17.67Å	Z=4			(Abs.);RRW,568-569;Holzel, 178.
SiO4. H <sub>2</sub> O         P2,2,2,1         b=6.9436Å Z=8         C=6.6748Å           (SiO2,)e(O,OH) <sub>2</sub> (V-1)         (O,OH) <sub>2</sub> (H <sub>2</sub> O)         P2         c=6.6748Å         Z=0           (SiO2,)e(O,OH) <sub>2</sub> (V-1)         (O,OH) <sub>2</sub> (H <sub>2</sub> O)         P2         c=11.87Å         Z=2           (SiO2,)e(O,OH) <sub>2</sub> (V-1)         (O,OH) <sub>2</sub> (H <sub>2</sub> O)         PC         C=11.87Å         Z=7           (SiO2,)e(O,OH) <sub>2</sub> (V-1)         (O,OH) <sub>2</sub> (H <sub>2</sub> O)         PC         C=11.87Å         Z=7           (SiO4,)e(O,OH) <sub>2</sub> (V-1)         (D,OH) <sub>2</sub> (H <sub>2</sub> O)         PC         C=22.392Å         Z=7           (B(OH) <sub>2</sub> (M)OH) <sub>2</sub> (CO) <sub>2</sub> (PE-2'S) <sup>2</sup> B         Trig.         a=11.16Å         Z=2           (B(OH) <sub>2</sub> (M)OH) <sub>2</sub> (CO) <sub>3</sub> (PE-2'S) <sup>2</sup> B         Fing.         C=21.79Å         Z=21.79Å           (SO4).12H <sub>2</sub> O         (C=Ettingite)         PS <sub>3</sub> (PS <sub>3</sub> (PS <sub>3</sub> )         C=10.39Å         C=(2b) S(2b)           (SO4).12H <sub>2</sub> O         (SO4)(CH) <sub>2</sub> (H <sub>2</sub> O)(OH)         Mon.         a=24.03Å         B=106.94° (Ca) <sub>1</sub> (4e)           (SO4, CO3) <sub>2</sub> (OH)         (Ettingite)         P2./a         DTH         C=10.88Å         Z=2           (SO3, CO3) <sub>2</sub> (OH), 46H <sub>2</sub> O         (Ettingite)         P2./a         DTH         C=5.9Å         S(18)           (NO3) <sub>2</sub> GH <sub>2</sub> O         (B)[F <sup>2</sup> (S <sup>2</sup> O <sub>3</sub>	SODIUM	(H <sub>3</sub> O)(Na,K)(UO <sub>2</sub> )		Orth.	a=13.931Å	β=103.2°			Can.Min.,1997,35,735-741;
(SiO <sub>3</sub> ) <sub>8</sub> (O,OH) <sub>2</sub> (Na,Fe) <sub>2</sub> Ba <sub>2</sub> Sr <sub>2</sub> Ti <sub>2</sub> Mon.         a=10.516Å β=109°17           (SiO <sub>3</sub> ) <sub>8</sub> (O,OH) <sub>2</sub> (COH) <sub>2</sub> (H <sub>2</sub> O)         P2         b=9.764Å Z=2           (SiO <sub>3</sub> ) <sub>8</sub> (O,OH) <sub>2</sub> (2∞)[Si <sub>6</sub> O <sub>2</sub> J]         PC         c=11.87Å           (SiO <sub>3</sub> ) <sub>8</sub> (O,OH) <sub>2</sub> (2o)(H) <sub>2</sub> (H <sub>2</sub> O)         Pcam         b=9.764Å Z=2           (SiO <sub>3</sub> ) <sub>8</sub> (O,OH) <sub>2</sub> (2o)(H) <sub>2</sub> (H <sub>2</sub> O)         Pcam         b=9.764Å Z=2           (SiO <sub>3</sub> ) <sub>8</sub> (O,OH) <sub>2</sub> (2o)(H) <sub>2</sub> (H <sub>2</sub> O) <sub>2</sub> J         Pcam         b=9.764Å Z=2           (SiO <sub>3</sub> ) <sub>8</sub> (O,OH) <sub>2</sub> (2o)(H) <sub>2</sub> (H <sub>2</sub> O) <sub>2</sub> J         Pcam         b=9.764Å Z=2           (B(OH) <sub>3</sub> )(OH) <sub>1</sub> ,c(H <sub>2</sub> O) <sub>2</sub> J         Price         c=21.79Å         Z=2           (SiO <sub>4</sub> ) <sub>2</sub> (OH) <sub>2</sub> (COH) <sub>2</sub> (H <sub>2</sub> O) <sub>2</sub> J         Pcan         d=11.04Å         Z=2           (SO <sub>4</sub> ).12H <sub>2</sub> O         (CO)(H <sub>2</sub> (H <sub>2</sub> O) <sub>2</sub> J         Pca         d=10.89Å         Ca(cb) S(2b)           (SO <sub>4</sub> ).12H <sub>2</sub> O         (Price         (Price         Price         C=10.39Å         Pca         S(A) <sub>1</sub> I <sub>2</sub> I <sub>2</sub> I <sub>2</sub> O           (SO <sub>4</sub> ).12H <sub>2</sub> O         (Price         (Price         Price         Price         S(A) <sub>1</sub> I <sub>2</sub> I <sub>2</sub> I <sub>2</sub> O         Price         S(A) <sub>1</sub> I <sub>2</sub> I <sub>2</sub> I <sub>2</sub> O           (SO <sub>4</sub> ).2D <sub>2</sub> O(H)         (Price         Price	BOLTWOODITE	SiO <sub>4</sub> .H <sub>2</sub> O		P2,2,2,	b=6.9436Å	Z=8			Am.Min., 1976, 61, 1054-1055
(SiO <sub>3</sub> ) <sub>6</sub> (O.OH) <sub>2</sub> (H <sub>2</sub> O) P2 b=9.516 β=109°17' (Na,Fe) <sub>2</sub> Ba <sub>2</sub> Sr <sub>2</sub> Ti <sub>2</sub> Mon. b=9.516 β=109°17' (SiO <sub>3</sub> ) <sub>6</sub> (O.OH) <sub>2</sub> (H <sub>2</sub> O) P2 b=9.74 Z=2 (=1.87 Å ==10.517 Å Z=7 (=2.392 Å Z=2.392 Å ==10.517 Å Z=7 (=2.392 Å Z=2.392 Å Z=2 (=2.392 Å					c=6.6749Å				(Abs.); Am. Min., 1981, <u>66</u> , 610-
(Sic <sub>3</sub> ) <sub>8</sub> (O.OH) <sub>2</sub> (Na, Fe) <sub>2</sub> Ba <sub>2</sub> Sr <sub>2</sub> Tr <sub>2</sub> (Mon. a=10.516A β=109°17' (Sic <sub>3</sub> ) <sub>8</sub> (O.OH) <sub>2</sub> (No.H) <sub>2</sub> (H <sub>2</sub> O) P2 b=9.764A Z=2 (Sic <sub>3</sub> ) <sub>8</sub> (O.OH) <sub>2</sub> (P <sub>2</sub> O <sub>2</sub> II) P2 b=9.76A Z=2 (Sic <sub>3</sub> O <sub>2</sub>									625; Hölzel, 195.
SiGo,OH)2	STRONTIOJOA-	(Na, Fe) <sub>2</sub> Ba <sub>2</sub> Sr <sub>2</sub> Ti <sub>2</sub>	(Na,Fe) <sub>2</sub> Ba <sub>2</sub> Sr <sub>2</sub> Ti <sub>2</sub>	Mon.	a=10.516Å	$\beta = 109^{\circ}17'$			Am.Min., 1982, 67, 809-816;
Na₂Ba₂Sr₂Ti₂ Na₂Ba₃Sr₂Ti² Na₂Ba₃Sr₂Ti² Orth. a=10.517Å Z=?  II- (SiO₃)a(O,OH)₂ (O,OH)₂(H₂O) Pcam b=9.77Å  L₂O (Sie,OH)₂ (O,OH)₂(H₂O) Pcam b=9.77Å  Cae,Fe₂(SO₄)₂ Cae,Fe₂(SS₂B¹ Trig. a=11.16Å Z=2  (B(OH)₄)(OH)₁₂ (OGOH)₂(H₂O)₂s¹ Hex. a=11.04Å Z=2  (SO₄).12H₂O (Soa,12H₂O) (OCH)(H₂O)₂s¹ Pe₃ c=10.39Å  (SOa,12H₂O) (Soa,12H₂O) (OCH)(H₂O)₂s¹ Pe₃ c=10.39Å  (SOa,12H₂O) (Soa,12H₂O) (OCH)(H₂O)₂s¹ Pe₃ c=10.39Å  (SOa,12H₂O) (Soa,10A)₁₀O₂s (H₂O)(OH) Mon. a=24.03Å β=106.94° Cai.⊪(4e) K(4e) b=5.11Å  (SOa,10A)₂ (COa)₂(OH) (gylS¹O₄lgylC²O₂l₂ P₂√a b=5.11Å Z=2  (SOa,10A)₂ (COa)₂(OH) (gylS²O₄lgylC²O₂l₂ P₂√a b=5.11Å Z=2  (SOa,10A)₂ (COa)₂(OH) (gylS²O₄lgylC²O₂l₂ P₂√a b=5.11Å Z=2  (SOa,10A)₂ (GylSOa)₂ (GylSoa)₂ Prig. A=10.39Å Fe(3a) K(9e)  (SOa,10A)₂ (GylFe²(S²O₄)₂ Prig. A=10.39Å Fe(3a) K(9e)  (Soa,10A)₂ (GylFe²(S²O₄)₂ Prig. A=10.39Å Fe(3a) K(9e)  (Soa,10A)₂ (GylFe²(S²O₄)₂ Prig. A=10.39Å A=10.39Å Fe(3a) K(9e)  (Soa,10A)₂ (GylFe²(S²O₄)₂ Prig. A=10.39Å A=10.39Å Fe(3a) K(9e)  (Soa,10A)₂ (GylFe²(S²O₄)₂ Prig. A=10.39Å A=10.39Å Fe(3a) K(9e)	QUINITE	(SiO <sub>3</sub> ) <sub>8</sub> (O,OH) <sub>2</sub> .H <sub>2</sub> O	(0,0H) <sub>2</sub> (H <sub>2</sub> 0) {2∞}[Sig 0,1]	P2	b=9.764Å c=11.87Å	Z=2			Hölzel,206.
II- (SiO₃)e(O,OH)₂ (O,OH)₂(H₂O) Pcam b=9.77Å  II- (SiO₃)e(O,OH)₂ (O,OH)₂(H₂O) Pcam b=9.77Å  Cae₁Fe₂(SO₄)₂ (Cae₁Fe₂°S₂¹B² Trig. a=11.16Å Z=2  (B(OH)₄)(OH)₁₂ (CoH)₁e(H₂O)₂₅] P31c c=21.79Å  Cas₃Si(OH)e(CO₃) (Cae₁Si°C″O₂₅² Hex. a=11.04Å Z=2 (Ca(6c) Si(2a) Ca(6c) Si(2a) (SO₄).12H₂O (SO₄).12H₂O (SO₄).2Hβ² (Po)₂₂ (Po)₂ (Po)β² (	STRONTIO-		Na <sub>2</sub> Ba <sub>2</sub> Sr <sub>2</sub> Ti <sub>2</sub> °	Orth.	a=10.517Å	Z=2			Am.Min., 1982, <u>67</u> ,809-816;
Ca6Fe <sub>2</sub> (SO <sub>4</sub> ) <sub>2</sub> Ca6 ( <sup>la</sup> Fe <sub>2</sub> - <sup>S<sub>2</sub></sup> <sup>1</sup> b' ( <sup>la</sup> Ch) <sub>16</sub> (H <sub>2</sub> O) <sub>26</sub> ]       Trig.       a=11.16Å       Z=2         (B(OH) <sub>4</sub> )(OH) <sub>12</sub> (Ca(OH) <sub>16</sub> (H <sub>2</sub> O) <sub>26</sub> ]       P31c       c=21.79Å       Z=2         (SO <sub>4</sub> ).12H <sub>2</sub> O       (Cac ( <sup>la</sup> Ch) <sub>16</sub> (H <sub>2</sub> O) <sub>12</sub> ]       P63       a=11.04Å       Z=2       Ca(6c) Si(2a)         (SO <sub>4</sub> ).12H <sub>2</sub> O       (Cac ( <sup>la</sup> Ch) <sub>16</sub> (H <sub>2</sub> O) <sub>12</sub> ]       P63       a=11.04Å       Z=2       Ca(6c) Si(2a)         (SO <sub>4</sub> ).12H <sub>2</sub> O       (Cac ( <sup>la</sup> Ch) <sub>16</sub> (H <sub>2</sub> O) <sub>12</sub> )       P63       m=24.03Å       p=106.94°       Ca(6c) Si(2a)         (SO <sub>4</sub> , CO <sub>3</sub> ) <sub>2</sub> (OH)       (A <sup>la</sup> Ch) <sub>16</sub> (A <sup>la</sup> Co <sub>3</sub> )       P2./a       b=5.11Å       Z=2       (Si,Al) <sub>1-√</sub> (4e)         (SO <sub>4</sub> , CO <sub>3</sub> ) <sub>2</sub> (OH)       (2c)(Si(Al) <sub>10</sub> O <sub>22</sub> )       P2./a       b=5.11Å       Z=2       (Si,Al) <sub>1-√</sub> (4e)         (CO <sub>3</sub> )(OH) <sub>4</sub> , 6H <sub>2</sub> O       (2c)(Si(Al) <sub>10</sub> O <sub>22</sub> )       Orth.       a=10.50Å       Z=8       7         (CO <sub>3</sub> )(OH) <sub>4</sub> , 6H <sub>2</sub> O       (Si  <sup>la</sup> Ch) <sub>10</sub> O <sub>22</sub>         Trig.       a=10.898A       a=10.39Å       Fe(3a) K(9e)         (NO <sub>3</sub> ) <sub>2</sub> , 6H <sub>2</sub> O       (Si) <sup>la</sup> Ch <sub>2</sub> O <sub>3</sub>         R 3       c=24.988A       a=27.59       C(18)	- ORTHOJOAQUI- NITE		(O,OH) <sub>2</sub> (H <sub>2</sub> O) {2∞}lSis <sup>t</sup> O <sub>24</sub> l	Pcam	b=9.77Å c=22.392Å				Hölzel,288.
(B(OH) <sub>4</sub> )(OH) <sub>12</sub> (Ge(OH) <sub>16</sub> (H <sub>2</sub> O) <sub>26</sub> ) P31C C=21.79Å  25H <sub>2</sub> O Ca <sub>3</sub> Si(OH) <sub>6</sub> (CO <sub>3</sub> ) Ca <sub>6</sub> <sup>US<sub>3</sub></sup> C <sup>C</sup> O <sub>3</sub> S' Hex. a=11.04Å Z=2 Ca(6c) Si(2a) (SO <sub>4</sub> ).12H <sub>2</sub> O (OH) <sub>6</sub> (H <sub>2</sub> O) <sub>12</sub> ] P6 <sub>3</sub> C=10.39Å  (SO <sub>4</sub> ).12H <sub>2</sub> O (≈Etringite) (	STURMANITE	Ca <sub>6</sub> Fe <sub>2</sub> (SO <sub>4</sub> ),	Cae la Fe, S, B	Trig.	a=11.16Å	Z=2			Am.Min., 1988, 73, 195; Hölzel,
Ca <sub>3</sub> Si(OH) <sub>6</sub> (CO <sub>3</sub> )         Ca <sub>6</sub> <sup>[9]</sup> Si <sup>2</sup> C <sup>2</sup> O <sub>3</sub> S <sup>1</sup> Hex.         a=11.04Å         Z=2         Ca(6c) Si(2a)           (SO <sub>4</sub> ).12H <sub>2</sub> O         [O <sub>7</sub> (OH) <sub>6</sub> (H <sub>2</sub> O) <sub>12</sub> ]         P6 <sub>3</sub> c=10.39Å         Z=2         C(2b) S(2b)           KCa <sub>6</sub> (Si Al) <sub>10</sub> O <sub>22</sub> K <sup>I'III</sup> Ca <sub>6</sub> (H <sub>2</sub> O) <sub>1</sub> OH)         Mon.         a=24.03Å         p=106.94°         Ca <sub>1,III</sub> (4e) K(4e)           (SO <sub>4</sub> , CO <sub>3</sub> ) <sub>2</sub> (OH)         (g)[S¹O <sub>4</sub> ](g)[C <sup>I</sup> O <sub>3</sub> ] <sub>2</sub> P2 <sub>1</sub> /a         b=5.11Å         Z=2         (Si,Al) <sub>1-1</sub> (4e)           (SO <sub>4</sub> , CO <sub>3</sub> ) <sub>2</sub> (OH)         (g)[S¹O <sub>4</sub> ](s)[C <sup>I</sup> O <sub>3</sub> ] <sub>2</sub> Orth.         a=10.50Å         Z=8?         Ca <sub>1,III</sub> (4e) K(9e)           (CO <sub>3</sub> )(OH) <sub>4</sub> .6H <sub>2</sub> O         (g)[Fe <sup>1</sup> (S¹O <sub>4</sub> ) <sub>6</sub> ]         Trig.         a=10.898Å         a <sub>R</sub> =10.39Å         F(3a) K(9e)           (NO <sub>3</sub> ) <sub>2</sub> .6H <sub>2</sub> O         (g)[Fe <sup>2</sup> (S¹O <sub>4</sub> ) <sub>6</sub> ]         R 3         c=24.989Å         α=62°59         S(18f)           (SI)N <sup>1</sup> VO <sub>3</sub> 12         Z=3         Z <sub>R</sub> =1         Z <sub>R</sub> =1         Z <sub>R</sub> =1		(B(OH) <sub>4</sub> )(OH) <sub>12</sub> .25H <sub>2</sub> O	$[O_8(OH)_{16}(H_2O)_{25}]$ (=Ettringite)	P31c	c=21.79Å				137.
(SO <sub>4</sub> ).12H <sub>2</sub> O [O <sub>7</sub> (OH) <sub>6</sub> (H <sub>2</sub> O) <sub>12</sub> ] P6 <sub>3</sub> c=10.39A (C(2b) S(2b)  (≈Ettingite)  (≈Ettingite)  (≈Ettingite)  (≈Ettingite)  (≈Ettingite)  (≈Ca <sub>6</sub> (Si,Al) <sub>10</sub> O <sub>22</sub> K <sup>170</sup> Ca <sub>6</sub> (H <sub>2</sub> O) <sub>1</sub> OH) Mon. a=24.03A β=106.94° Ca <sub>1,III</sub> (4e) K(4e)  (SO <sub>4</sub> ,CO <sub>3</sub> ) <sub>2</sub> (OH)  (SO <sub>4</sub> ,CO <sub>3</sub> ) <sub>2</sub> (OH)  (SO <sub>4</sub> ,CO <sub>3</sub> ) <sub>2</sub> (OH)  (So <sub>4</sub> (Si,Al) <sub>10</sub> O <sub>22</sub> P2 <sub>1</sub> /a b=5.11A Z=2  (Si,Al) <sub>1,1</sub> √(4e)  (Ca <sub>5</sub> (So <sub>4</sub> ) <sub>2</sub> (So <sub>4</sub> ) <sub>2</sub> Orth. a=10.50A Z=8 ?  (CO <sub>3</sub> )(OH) <sub>4</sub> .6H <sub>2</sub> O  (CO <sub>3</sub> )(OH) <sub>2</sub> .6H <sub>2</sub> O  (Si)(N <sub>2</sub> ) <sub>2</sub> .6H <sub>2</sub> O	THAUMASITE	Ca <sub>3</sub> Si(OH) <sub>6</sub> (CO <sub>3</sub> )	Ca <sub>6</sub> <sup>[8]</sup> Si <sup>o</sup> C <sup>I</sup> O <sub>3</sub> S <sup>1</sup>	Hex.	a=11.04Å	Z=2	Ca(6c) Si(2a)		Acta Cryst.,1971, <u>B27</u> ,594-
KCa <sub>6</sub> (Si,Al) <sub>10</sub> O <sub>22</sub>   K <sup>110</sup> Ca <sub>6</sub> (H <sub>2</sub> O)(OH)   Mon.   a=24.03Å   β=106.94°   Ca <sub>1,  </sub> (4e) K(4e)   K(3e)   (SO <sub>4</sub> ,CO <sub>3</sub> ) <sub>2</sub> (OH)   (g)[S <sup>1</sup> O <sub>4</sub> [g)[C <sup>1</sup> O <sub>3</sub> ] <sub>2</sub>   P2 <sub>4</sub> /a   b=5.11Å   Z=2   (Si,Al) <sub>1-</sub> √(4e)   C=10.88Å   C=10.88Å   Z=8 ?   Orth.   a=10.50Å   Z=8 ?   Pmma   b=54.71Å   C=5.59Å   C=5.59Å   K(3e) K(3e)   K(3hFe <sup>3</sup> (SiO <sub>4</sub> ) <sub>6</sub>   K(3hFe <sup>3</sup> (SiO <sub>4</sub> ) <sub>6</sub>   R 3   C=24.989Å   α=62°59   S(18f)   C=24.989Å   α=62°59   S(18f)   C=24.989Å   C=33		(SO <sub>4</sub> ).12H <sub>2</sub> O	[O <sub>7</sub> (OH) <sub>6</sub> (H <sub>2</sub> O) <sub>12</sub> ] (≈Ettringite)	ည် တိ	c=10.39A		C(2b) S(2b)		601;SK,3/A,344-345, <u>21,</u> 448-451, <u>18,533-534;RRW,612;</u>
KC3e(Si,Al) <sub>10</sub> C <sub>22</sub>   K <sup></sup> C3e(FI <sub>2</sub> C) <sub>1</sub> (CH)   Mon.   A=24,03A   B=105.94   Cal <sub>111</sub> (4e) N(4e)   N(4e)   (SO <sub>4</sub> ,CO <sub>3</sub> ) <sub>2</sub> (CH)   (g)[S'O <sub>4</sub> [[g)[C"O <sub>3</sub> ] <sub>2</sub>   P2 <sub>1</sub> /a   b=5.11Å   Z=2   (Si,Al) <sub>1-</sub> √(4e)   C=10.88Å   C=10.50Å   Z=8 ?   C=10.50Å   Z=8 ?   C=3.80		0 44.07	a love in collect		0		(42) (42)		Am Min 4027 62 1414 1420.
(CO <sub>3</sub> )(CH <sub>2</sub> CO <sub>4</sub> CO <sub>4</sub> ) (Si <sub>1</sub> CO <sub>1</sub> CO <sub>2</sub> CO <sub>3</sub> CO <sub>4</sub> CO <sub>4</sub> CO <sub>4</sub> CO <sub>5</sub> CO <sub>4</sub>	TUSCANITE	KCa <sub>6</sub> (Si,Al) <sub>10</sub> O <sub>22</sub> (SO, CO <sub>2</sub> ) <sub>2</sub> (OH)	K <sup>1,12</sup> Ca <sub>6</sub> (H <sub>2</sub> O)(OH)	Mon. P2./a	a=24.03A b=5.11Å	$\beta = 106.94^{\circ}$	Cal-III(4e) K(4e)		Am.Min., 1977, 62, 1114-1120; Am.Min., 1977, 62, 1110-1113;
CaCu <sub>5</sub> (AsO <sub>4</sub> ) <sub>2</sub> Orth.       a=10.50Å       Z=8?         (CO <sub>3</sub> )(OH) <sub>4</sub> .6H <sub>2</sub> O       Pmma       b=54.71Å         (CO <sub>3</sub> )(OH) <sub>4</sub> .6H <sub>2</sub> O       C=5.59Å         K <sub>3</sub> Na <sub>8</sub> Fe(SO <sub>4</sub> ) <sub>6</sub> K <sub>3</sub> <sup>170</sup> Na <sub>8</sub> <sup>18</sup> (H <sub>2</sub> O) <sub>6</sub> Trig.       a=10.898Å       a <sub>R</sub> =10.39Å         (NO <sub>3</sub> ) <sub>2</sub> .6H <sub>2</sub> O       (g)Fe <sup>3</sup> (S¹O <sub>4</sub> ) <sub>6</sub> R 3       c=24.989Å       α=62°59'         K <sub>3</sub> Nu <sup>3</sup> O <sub>312</sub> Z <sub>R</sub> =1		.H <sub>2</sub> O	{2∞}{(Si,Al)₁0 <sup>(</sup> O <sub>22</sub> ]	5 <u>-</u> I	c=10.88Å	ı !			SR, 43A, 325-326; Hölzel, 227.
(NO₃)₂.6H₂O (g) Fe(3a) K(3e) (H₂O)e Trig. a=10.898Å a <sub>R</sub> =10.39Å Fe(3a) K(9e) (S(2a) (g) Fe°(S¹O₄)e  R 3 c=24.989Å α=62°59' S(18f) (g) Fu(O₃)₂.6H₂O (g) Fu(O₃)₂ (g) Fu(O₃)₃ (g) Fu(O₃)₂ (g) Fu(O₃)₃ (g) Fu(O₃)	TYROLITE	CaCu <sub>5</sub> (AsO <sub>4)2</sub> (CO <sub>3</sub> )(OH) <sub>4</sub> .6H <sub>2</sub> O		Orth. Pmma	a=10.50Å b=54.71Å c=5.59Å	Z=8 ?			RRW,635;Pov.,518;Hölzel,179.
$\{g\}[Fe^{(SO_4)_6}]$ R 3		K <sub>3</sub> Na <sub>8</sub> Fe(SO <sub>4</sub> ) <sub>6</sub>	K <sub>3</sub> <sup>1701</sup> Na <sub>8</sub> <sup>16</sup> (H <sub>2</sub> O) <sub>6</sub>	Trig.	a=10.898Å	a <sub>R</sub> =10.39Å	Fe(3a) K(9e)		Am.Min., 1986, 71, 826-829; Str.
		(NO <sub>3</sub> ) <sub>2</sub> .6H <sub>2</sub> O	{g}[Fe^(S'O <sub>4</sub> ) <sub>6</sub> ] {g}[N <sup>t</sup> O <sub>3</sub> ] <sub>2</sub>	ლ ლ	c=24.989Å Z=3	$\alpha = 62^{\circ}59^{\circ}$ $Z_R = 1$	S(18f)		1ab.,297-298;Pov.,600;RRW, 639;Hölzel,137.

NAME	CHEMICAL FORMULA	STRUCTURAL	SPACE GROUP	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
UPALITE	AI(UO <sub>2</sub> ) <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> O (OH).7H <sub>2</sub> O		(Mon.) Bbcm	a=34.68Å b=16.81Å c=13.72Å	Z=16			Am.Min.,1980 <u>,65,</u> 208(Abs.); K/B,161;Hölzel,182.
VOCHTENITE	(Fe <sup>2*</sup> ,Mg)Fe <sup>3#</sup> (UO <sub>2</sub> ) <sub>4</sub> (PO <sub>4</sub> ) <sub>4</sub> (OH) .12-13H <sub>2</sub> O		Mon. ?	a=12.606Å b=19.990Å c=9.990Å	β=102.31° Z=3			Min.Mag.,1989 <u>,53,</u> 473-478; Hölzel suppl
WALENTAITE	H <sub>4</sub> Ca <sub>4</sub> Fe <sub>12</sub> (AsO <sub>4</sub> ) <sub>10</sub> (PO <sub>4</sub> ) <sub>6</sub> .28H <sub>2</sub> O		Orth. I 222	a=26.24Å b=10.31Å c=7.38Å	Z=1			Am.Min.,1984 <u>,69</u> ,1193-1194; K/B,175;Hölzel,164.
WENKITE	Ba <sub>4</sub> Ca <sub>6</sub> (Si,Al) <sub>20</sub> O <sub>39</sub> (OH) <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub> .nH <sub>2</sub> O	Ba4 <sup>172</sup> Ca6 <sup>[8]</sup> (OH) <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub> (H <sub>2</sub> O) <sub>n</sub> {3∞}[(Si,Al) <sub>20</sub> O <sub>39</sub> ]	Hex. P'62m	a=13.511Å c=7.462Å	Z=1	Ba <sub>i</sub> (1b) Ba <sub>ii</sub> (3g) (Si,Al) <sub>i</sub> (12d) (Si,Al) <sub>ii</sub> (6k) 1/2(Al,Si)(4h)		Acta Cryst.,1974, <u>B30</u> ,1262- 1266; Zeit.Krist.,1973, <u>137,</u> 113- 126; Pov.,349;Str.Tab.,482; RRW,667.
WHITEITE – - (CaFeMg)	Ca(Fe,Mn)Mg <sub>2</sub> Al <sub>2</sub> (PO <sub>4</sub> ) <sub>4</sub> (OH) <sub>2</sub> .8H <sub>2</sub> O	Ca <sup>l8</sup> (Fe,Mn) <sup>I9</sup> Mg <sub>2</sub> ° Al <sub>2</sub> °P₄ <sup>†</sup> O₁6(OH) <sub>2</sub> (H <sub>2</sub> O) <sub>8</sub> ] (≈Jahnsite)	Mon. P2/a	a=14.90Å b=6.98Å c=10.13Å	β=113°7' Z=2			Min.Mag.,1978 <u>,42</u> ,309-323; K/B,155;Hölzel,176.
WHITEITE – - (MnFeMg)	MnFeMg <sub>2</sub> Al <sub>2</sub> (PO <sub>4</sub> ) <sub>4</sub> Mn <sup>(8</sup> Fe <sup>(6)</sup> Mg <sub>2</sub> ° (OH) <sub>2</sub> ·8H <sub>2</sub> O Al <sub>2</sub> °P <sub>4</sub> [O <sub>16</sub> (OH) <sub>2</sub> (H <sub>2</sub> O) <sub>8</sub> ]	Mn <sup>(8)</sup> Fe <sup>(5)</sup> Mg <sub>2</sub> ° Al <sub>2</sub> °P4 <sup>†</sup> (O <sub>16</sub> (OH) <sub>2</sub> (H <sub>2</sub> O) <sub>8</sub> ]	Mon. P2/a	a=14.99Å b=6.96Å c=10.14Å	β=113°19' Z=2			Min.Mag.,1978, <u>42</u> ,309-323; Hölzel,176.
WHITEITE – - (CaMnMg)	CaMnMg <sub>2</sub> Al <sub>2</sub> (PO <sub>4</sub> ) <sub>4</sub> Ca <sup>(3)</sup> Mn <sup>(5)</sup> Mg <sub>2</sub> ° (OH) <sub>2</sub> ·8H <sub>2</sub> O (H <sub>2</sub> O) <sub>6</sub> (OH) <sub>2</sub> (H <sub>2</sub> O) <sub>6</sub>	, Ca <sup>ls</sup> IMn <sup>te</sup> IMg <sub>2</sub> ° Al <sub>2</sub> °P4[O <sub>16</sub> (OH) <sub>2</sub> (H <sub>2</sub> O) <sub>8</sub> ]	Mon. P2/a	a=14.842Å b=6.976Å c=10.109Å	β=112.59° Z=2			Can.Min.,1989, <u>27,</u> 699-702.
WICKSITE	NaCa <sub>2</sub> MgFe (Fe,Mn) <sub>4</sub> (PO <sub>4</sub> ) <sub>6</sub> .2H <sub>2</sub> O	Ca₂ <sup>!ч</sup> (H₂O)₂ {3∞}[Na°Mg°Fe° (Fe,Mn)₄°P <sub>6</sub> C <sub>O24</sub> ]	Orth. Pcab	a=12.524Å b=12.907Å c=11.646Å	Z=4	Na(4a) Ca(8c) (Fe,Mn)(8c) P <sub>⊦⊞</sub> (8c)		Can.Min.,1997, <u>35</u> ,777-784; Hölzel,164.
WYARTITE	Ca <sub>3</sub> U(UO <sub>2</sub> ) <sub>6</sub> (CO <sub>3</sub> ) <sub>2</sub> (OH) <sub>18</sub> .4H <sub>2</sub> O		Orth. P2 <sub>1</sub> 2 <sub>1</sub> 2 <sub>1</sub>	a=11.25Å b=7.09Å c=20.80Å	Z=2			Am.Min.,1960, <u>45</u> ,200-208;Am. Min.,1959, <u>44</u> ,908(Abs.);Hötzel, 110;RRW,677;Pov.,327.
YECORAITE	Fe <sub>3</sub> Bi <sub>5</sub> O <sub>9</sub> (TeO <sub>3</sub> ) (TeO <sub>4</sub> ) <sub>2</sub> .9H <sub>2</sub> O		٠.	٥				Am.Min.,1986, <u>71</u> ,1547(Abs.); Hölzel,93.

### $A_pB_qC_rD_sE_xF_yG_z ... \ nAq.$

NAME	CHEMICAL	STRUCTURAL FORMULA	SPACE	UNIT CELL DIMENSIONS	MENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
ALTHUPITE	AITh(UO <sub>2</sub> ) <sub>7</sub> (PO <sub>4</sub> ) <sub>4</sub>	U <sup>(/by)</sup> Th <sup>[bp36]</sup> Al <sup>o</sup> O(OH) <sub>3</sub>	-	a=10.935Å	α=72.64°			Am.Min., 1988, 73, 189-199;
	O <sub>2</sub> (OH) <sub>5</sub> .15H <sub>2</sub> O	(H <sub>2</sub> O) <sub>15</sub> {2∞}{(UO <sub>2</sub> ) <sub>3</sub> O	٦-	b=18.567Å				Hölzel,183;K/B,162.
		(OH)(P¹O₄) <sub>2</sub> ] <sub>2</sub> (≈Phosphuranylite)		c=13.504Å	γ=84.21° Z=2			
ASHCROFTINE-	K <sub>5</sub> Na <sub>5</sub> (Y,Ca) <sub>12</sub> Si <sub>28</sub>	K <sub>s</sub> [tortz]Na <sub>5</sub> [8rtz]	Tet.	a=23.994Å	Z=4	K <sub>I-II</sub> (8i)		Am.Min., 1987, 72, 1176-1189;
-( <u>3</u>	O <sub>70</sub> (OH) <sub>2</sub> (CO <sub>3</sub> ) <sub>8</sub> .8H <sub>2</sub> O	(Y,Ca) <sub>12</sub> (C <sup>t</sup> O <sub>3</sub> ) <sub>8</sub> (H <sub>2</sub> O) <sub>8</sub> (OH) <sub>2</sub> (2∞)[Sj <sub>28</sub> <sup>t</sup> O <sub>70</sub> ]	I4/mmm	c=17.512Å		Si <sub>I-V</sub> (320) C <sub>I-II</sub> (6I)		RRW,39;Pov.,433.
	4	(≈Apophyllite)						
ASSELBORNITE	(Pb,Ba)(UO <sub>2</sub> ) <sub>6</sub>		Cub.	a=15.66A				Am.Min., 1984, 69, 565-569;
	(BiO)4(AsO4) <sub>2</sub> (OH) <sub>12</sub> .3H <sub>2</sub> O		Im3m	Z=4				Hölzel, 183.
CARLETONITE	KNa <sub>4</sub> Ca <sub>4</sub> Si <sub>8</sub> O <sub>18</sub>	K <sup>I¹0]</sup> Na <sub>4</sub> <sup>[5+1]</sup> Ca <sub>4</sub> <sup>[7]</sup>	Tet.	a=13.178Å	2=4	K(4f)Si <sub>I-II</sub> (16I)		Am.Min., 1972, 57, 765-778; Am.
	(CO <sub>3</sub> ) <sub>4</sub> (F,OH).H <sub>2</sub> O	(CO <sub>3</sub> )₄(F,OH)(H <sub>2</sub> O) {2∞}[Sig¹O₁8]	P4/mbm	c=16.695Å		Ca(16I)		Min., 1971, <u>56</u> , 1855-1866; RRW 107.
CHESSEXITE	Na <sub>4</sub> Ca <sub>2</sub> Mg <sub>3</sub> Al <sub>8</sub>		Orth.	a=13.70Å	Z=2			Am.Min., 1984, <u>69</u> , 406-412;
	(SiO <sub>4</sub> ) <sub>2</sub> (SO <sub>4</sub> ) <sub>10</sub> (OH) <sub>10</sub> .40H <sub>2</sub> O	7	<i>د</i>	b=27.96A c=9.99Å				Hölzel,137.
COCONINOITE	Fe, Al,(UO,),		Orth	2				RRW.139-140:Pov559:Str.
	(PO <sub>4</sub> ) <sub>4</sub> (SO <sub>4</sub> )(OH) <sub>2</sub> .		٠	•				Tab.,356;Am.Min.,1966,51,651
	.20H <sub>2</sub> O	1						-663;Hölzel,182.
EHRLEITE	Ca <sub>2</sub> ZnBe(PO <sub>4</sub> ) <sub>2</sub>	Ca <sub>2</sub> <sup>[//8]</sup> (P'O <sub>3</sub> OH)	- Tic	a=7.130Å	α=94.31°	Ca <sub>l-II</sub> (2i)Zn(2i)		Can.Min., 1987, <u>25</u> , 767-774;
	(PO <sub>3</sub> OH).4H <sub>2</sub> O	(H <sub>2</sub> O)₄{2∞}{Zn'Be'P <sub>2</sub> '		b=7.430Å	$\beta = 102.07^{\circ}$	Be(2i)		K/B,153;Hölzel,159.
		[80		c=12.479Å	γ=82.65° Z=2			
IQUIQUEITE	K <sub>3</sub> Na₄Mg(CrO₄)B <sub>24</sub>		Hex.	a=11.636Å	Z=3			Am.Min., 1986, 71,830-836;
	O <sub>39</sub> (OH) .12H <sub>2</sub> O		P31c	c=30.158A				Hölzel,118.
JOAQUINITE- (Ce) NaBa <sub>2</sub> FeTi <sub>2</sub> Ce <sub>2</sub>	NaBa <sub>2</sub> FeTi <sub>2</sub> Ce <sub>2</sub>	Na <sup>[6]</sup> Ba <sub>2</sub> <sup>l10]</sup> Fe <sup>[5]</sup> Ti <sub>2</sub> º	Mon.	a=10.516Å	$\beta = 109.67^{\circ}$	β=109.67° Na(2b)Ba(4b)		Am.Min., 1975, 60, 872-878;
	(SiO <sub>3</sub> ) <sub>8</sub> O <sub>2</sub> (OH).H <sub>2</sub> O		22	b=9.686Å	Z=2	Ce(4c)Fe(2b)		Am.Min., 1972, <u>57,</u> 85-102; Str. Tab. 401: Pov. 366
LEPERSONNITE-	Ca(Gd,Dy) <sub>2</sub> (UO <sub>2</sub> ) <sub>24</sub>	771 C to 170-1	Orth.	a=16.23Å	Z=2			Am.Min., 1983, 68, 1248-1252;
- (Gd)	(CO <sub>3</sub> ) <sub>8</sub> Si <sub>4</sub> O <sub>12</sub> 60H <sub>2</sub> O		Pnnm	b=38.74Å c=11.73Å				Hölzel,110.
MACHATSCHKI-	(Ca,Ña)₅(AsO₄)		Trig.	a=15.127Å	9=Z			Am.Min., 1983, <u>68</u> , 851-852
3	(AsO <sub>3</sub> OH) <sub>3</sub> PO <sub>4</sub> . 15H <sub>2</sub> O		R3c	c=22.471Å				(Abs.);Hölzel,177;Am.Min., 1977,62,1260(Abs.);K/B,167.
MCAUSLANITE	Fe <sub>3</sub> Al <sub>2</sub> (PO <sub>4</sub> ) <sub>3</sub>		Tric.	a=10.055Å	$\alpha = 105.84^{\circ}$			Can.Min., 1988, 26, 917-921;
	(PO <sub>3</sub> OH)F.18H <sub>2</sub> O		<u>7</u> ::	b=11.568Å	β=93.66°			Hölzel, suppl
				c=6.888Å	γ=106.47° Z=1			

# ApBqCrDsExFyGz ... nAq.(cont.)

NAME	CHEMICAL	STRUCTURAL FORMUII A	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
MENDOZAVILITE	NaCa <sub>2</sub> Fe <sub>6</sub> (PO <sub>4</sub> ) <sub>2</sub> (PMo <sub>11</sub> O <sub>39</sub> ) (OH,Cl) <sub>10</sub> .33H <sub>2</sub> O		ć	ć				Am.Min.,1988 <u>,73</u> ,193(Abs.); Hölzel,178.
OBRADOVICITE	H <sub>4</sub> (K,Na)CuFe <sub>2</sub> (AsO <sub>4</sub> )(MoO <sub>4</sub> ) <sub>5</sub> . .12H <sub>2</sub> O		Orth. Pcmn	a=15.046Å b=14.848Å c=11.056Å	Z=4			Min.Mag.,1986 <u>,50,</u> 283-284; Hölzel,178.
ORPHEITE	H <sub>6</sub> Pb <sub>10</sub> Al <sub>20</sub> (PO <sub>4</sub> ) <sub>12</sub> (SO <sub>4</sub> ) <sub>5</sub> (OH) <sub>40</sub> .11H <sub>2</sub> O (?)		Trig. R 3m	a=7.00Å c=16.72Å	¿=Z			Am.Min.,1976, <u>61,</u> 176(Abs.); Encyc.Miner.Nam.,224;Hölzel, 174;K/B,176.
ORTHOJOAQUI- NITE- (Ce)	NaBa <sub>2</sub> FeCe <sub>2</sub> Ti <sub>2</sub> (SiO <sub>3</sub> ) <sub>8</sub> O <sub>2</sub> (O,OH) H <sub>2</sub> O	Na <sup>te</sup> lBa <sub>2</sub> <sup>1101</sup> Fe <sup>[5]</sup> Ti <sub>2</sub> ° Ce <sub>2</sub> <sup>[7]</sup> O <sub>2</sub> (O,OH)(H <sub>2</sub> O) {2∞}ISi₄ <sup>t</sup> O <sub>12</sub> ] <sub>2</sub>	Orth.? Ccmm	a=10.477Å b=9.599Å c=22.59Å	Z=4			Am.Min.,1982, <u>67,</u> 809-816; Hölzel,206.
PARAMENDOZA- VILITE	NaAI4Fe <sub>7</sub> (PO <sub>4</sub> ) <sub>5</sub> (PMo <sub>12</sub> O <sub>40</sub> )(OH) <sub>16</sub> .56H <sub>2</sub> O		خ	ځ				Am.Min.,1988 <u>,73</u> ,194(Abs.); Hölzel,178.
PUMPELLYITE- - (Fe <sup>2*</sup> )	Ca <sub>2</sub> Fe <sup>2*</sup> Al <sub>2</sub> (SiO <sub>4</sub> ) (Si <sub>2</sub> O <sub>7</sub> )(OH) <sub>2</sub> .H <sub>2</sub> O	Ca <sub>2</sub> <sup>[7]</sup> (H <sub>2</sub> O){3∞}{Fe° Al <sub>2</sub> °Si₃¹O₁₁(OH)₂] (≈Clinozoisite)	Mon. A2/m	a=8.81Å b=5.94Å c=19.14Å	α=97.6° Z=2			RRW,497;Pov.,404-405;Str. Tab.,399;Am.Min.,1983, <u>68,</u> 1250(Abs.);Hölzel,203.
PUMPELLYITE- - (Fe <sup>3*</sup> )	Ca <sub>2</sub> Fe <sup>3*</sup> Al <sub>2</sub> (SiO <sub>4</sub> ) (Si <sub>2</sub> O <sub>7</sub> )(OH,O) <sub>2</sub> .H <sub>2</sub> O	Ca <sub>2</sub> <sup>[7]</sup> (H <sub>2</sub> O){3∞}[Fe° Al <sub>2</sub> °Si₃¹O₁₁(OH,O)₂] (≈Clinozoisite)	Mon. A2/m	خ				Encyc.Miner.Nam.,246.
PUMPELLYITE- - (Mg)	Ca <sub>2</sub> MgAl <sub>2</sub> (SiO <sub>4</sub> ) (Si <sub>2</sub> O <sub>7</sub> )(OH) <sub>2</sub> .H <sub>2</sub> O	Ca₂ <sup>[7]</sup> (H₂O){3∞}[Mg° Al₂°Si ₃¹O₁₁(OH)₂]	Mon. A2/m	a=8.83Å b=5.90Å c=19.17Å	β=97°7′ Z=4	Са <sub>і-іі</sub> (4h) (AI,Mg,Fe)(4f) AI(8j)Si <sub>і-ііі</sub> (4i)		Acta Cryst.,1969, <u>B25,</u> 2276- 2281;Hölzel,203.
PUMPELLYITE- - (Mn)	Ca <sub>2</sub> MnAl <sub>2</sub> (SiO <sub>4</sub> ) (Si <sub>2</sub> O <sub>7</sub> )(OH) <sub>2</sub> .H <sub>2</sub> O	Ca <sub>2</sub> <sup>[7]</sup> (H <sub>2</sub> O){3∞}[Mn° Al <sub>2</sub> °Si₃ <sup>†</sup> O₁₁ (OH)₂]	Mon. A2/m	a=8.923Å b=5.995Å c=19.156Å	β=97º8' Z=4			Bull.Min.,1981, <u>104,</u> 396-399; Am.Min.,1983, <u>68,</u> 1250(Abs.); Hölzel,203.
ROEBLINGITE	Ca <sub>6</sub> MnPb <sub>2</sub> (Si <sub>3</sub> O <sub>9)2</sub> (SO <sub>4)2</sub> (OH) <sub>2</sub> .4H <sub>2</sub> O	Ca <sub>6</sub> °Pb <sub>2</sub> (OH) <sub>2</sub> (H <sub>2</sub> O)₄ {2∞}[Mn°(Si₃¹O₃) <sub>2</sub> ]	Mon. C2/m	a=13.208Å b=8.287Å c=13.089Å	β=106.65°′ Z=2	Mn(2d)Pb(4i) Ca <sub>l</sub> (4i)Ca <sub>ll</sub> (8j) 		Am.Min., 1984, <u>69</u> , 1173-1179; Am.Min., 1966, <u>51</u> , 504-508; RRW, 522; Pov., 394; Str. Tab., 378.
SARYARKITE-(Y)	Ca(Y,Th)Al <sub>5</sub> (SiO <sub>4</sub> ) <sub>2</sub> (PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>7</sub> .6H <sub>2</sub> O		Tet. P42 <sub>1</sub> 2	a=8.213Å b=6.55Å	Z=4			Am.Min.,1964, <u>49</u> ,1775(Abs.); RRW,539;Pov.,395;Str.Tab., 572;Hölzel,193.
SCHRÖCKINGE- RITE	NaCa <sub>3</sub> (UO <sub>2</sub> )(SO <sub>4</sub> ) (CO <sub>3</sub> ) <sub>3</sub> F.10H <sub>2</sub> O	(H <sub>2</sub> O) <sub>4</sub> (2∞)[NaCa <sub>3</sub> (UO <sub>2</sub> )(C <sup>tr</sup> O <sub>3</sub> ) <sub>3</sub> (S <sup>t</sup> O <sub>4</sub> )F (H <sub>2</sub> O) <sub>6</sub> ]	Tric. P 1	a=9.60Å b=9.62Å c=14.46Å	$\alpha$ =91°42' $\beta$ =91°48' $\gamma$ =120°5' Z=2			Am.Min., 1959, 44, 1020-1025; Min.Abs., 86M/4306; Pov., 626; Str. Tab., 249; RRW, 546; Hörzel, 109.
SERGEEVITE	Ca <sub>2</sub> Mg <sub>11</sub> (CO <sub>3</sub> ) <sub>4</sub> (HCO <sub>3</sub> ) <sub>4</sub> (OH) <sub>4</sub> . 6H <sub>2</sub> O		Trig.	a=19.01Å c=7.82Å	Z=3			Am.Min.,1981, <u>66</u> ,1100(Abs.); Hölzel,106.

# ApBqCrDsExFyGz ... nAq.(cont.)

NAME	CHEMICAL	STRUCTURAL FORMULA	SPACE	UNIT CELL DIMENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
SHUISKITE	Ca <sub>2</sub> MgCr <sub>2</sub> (SiO <sub>4</sub> ) (Si <sub>2</sub> O <sub>7</sub> )(OH) <sub>2</sub> .H <sub>2</sub> O	Ca₂ <sup>[71</sup> [3∞][Mg°Cr₂° SiO₄Si₂¹O <sub>7</sub> (OH)₂ (H₂O)] (=Pumpellyite)	Mon. A2/m	a=8.897Å β=98° b=5.843Å Z=4 c=19.41Å			Am.Min.,1982 <u>,67</u> ,860(Abs.); Hölzel,203.
STEENSTRUPI-	Na <sub>14</sub> Ce <sub>6</sub> Mn <sub>2</sub> Fe <sub>2</sub> Zr	i i	Trig.	a=10.46Å			Am.Min.,1984, <u>69</u> ,215(Abs.);
NE - (Ce)	(FO4)7812O36(OT)2 3H <sub>2</sub> O		E E S	Z=3			577.
TATARSKITE	Ca <sub>6</sub> Mg <sub>2</sub> (SO <sub>4</sub> ) <sub>2</sub>		2	2			Am.Min., 1964, 49, 1151 (Abs.);
	(CO <sub>3</sub> ) <sub>2</sub> Cl <sub>4</sub> (OH) <sub>4</sub> 7H <sub>2</sub> O						Hölzel,137;Str.Tab.,296;Pov., 600.
VISÉITE	Ca <sub>10</sub> Al <sub>24</sub> (PO <sub>4</sub> ) <sub>14</sub>	Ca10Al24(PO4)14F3O13 Cub.	Cub.	a=13.65Å			Min.Mag.,1977,41437-442;
	(SiO <sub>4</sub> ) <sub>6</sub> F <sub>3</sub> O <sub>43</sub>	(H,O)7/300)[SikO <sub>3</sub> ]	<i>د</i>	Z=1?			RRW,654;Pov.,532;Str.Tab.,
	.72H <sub>2</sub> O	(≈Analcime.Zeolite)	_				472;Hölzel,243;Gottardi &
							Galli,1985,76;LF,293.
XIANGJIANGITE (Fe.Al)(UO3)	(Fe.Al)(UO <sub>2</sub> ) <sub>4</sub>		Tet.	a=7.17Å Z=1			Am.Min., 1979, 64, 466 (Abs.).
	(PO <sub>4</sub> ) <sub>2</sub> (SO <sub>4</sub> ) <sub>2</sub> (OH)		٠	c=22.22Å			K/B,176;Hölzel,179;

### **ORGANIC MINERALS**

NAME         FORMULA FORMULA         FORMULA FORMULA           ABELSONITE         NIC3:H32N4         {g}{NIC3:H32N4}           ACETAMIDE         CH3CONH2         {g}{NIC3:H32N4}           AMBER         CH3CONH2         {g}{NIC3:H32N4}           CALCLACITE         Ca(CH3COO)CI         {f}{C}{NIC3:H2COO}CI           EARLANDITE         Ca(CH5COO)CI         {H2O}s           EVENKITE         Ca(CH5COO)CI         {g}{S}{C3:H32}           FICHTELITE         C10H22O3         {g}{S}{C3:H32}           GLUSHINSKITE         MgC2O4.2H2O         GGUANINE           GUANINE         C5H3(NH2)N4O	FORMULA					LUNA LUI LOI CHO	CLCATCTTC
NiC <sub>3</sub> ,H <sub>32</sub> N <sub>4</sub> (g)   CH <sub>3</sub> CONH <sub>2</sub> (g)   CH <sub>3</sub> CONH <sub>2</sub> (g)   Ca(CH <sub>3</sub> COO)Cl (g)   .5H <sub>2</sub> O   Ca <sub>3</sub> (C <sub>6</sub> H <sub>5</sub> O7) <sub>2</sub> .4H <sub>2</sub> O   C <sub>2</sub> 4H <sub>50</sub>   C <sub>19</sub> H <sub>34</sub> (g)   C <sub>19</sub> H <sub>34</sub> (g)   E C <sub>10</sub> H <sub>2</sub> O <sub>3</sub>   E C <sub>10</sub> H <sub>2</sub> O <sub>3</sub>   E C <sub>10</sub> H <sub>2</sub> O <sub>3</sub>   E C <sub>10</sub> H <sub>2</sub> O <sub>4</sub> (H <sub>2</sub> O <sub>4</sub> )   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O		GROUP	UNII CELL DIMENSIONS	MENSIONS	POSITIONS	SIRUCIONE ITPE	KEFEKENCES
CH <sub>3</sub> CONH <sub>2</sub> (g)   C,H,O  (G)   Ca(CH <sub>3</sub> COO)C  (g)   .5H <sub>2</sub> O (Ca <sub>3</sub> (C <sub>6</sub> H <sub>5</sub> O <sub>7</sub> ) <sub>2</sub> .4H <sub>2</sub> O (C <sub>2</sub> 4H <sub>5</sub> O (C <sub>19</sub> H <sub>3</sub> A (g)   C <sub>19</sub> H <sub>34</sub> (g)		Tric.	a=8.44Å	$\alpha = 90^{\circ}53'$			Am.Min., 1978, <u>63</u> , 930-937;
CH <sub>3</sub> CONH <sub>2</sub> (g)   C,H,O   Ca(CH <sub>3</sub> COO)C  (f)  Sh <sub>2</sub> O  Ca(CH <sub>5</sub> O <sub>7</sub> ) <sub>2</sub> .4H <sub>2</sub> O  C <sub>2</sub> 4H <sub>5</sub> O  C <sub>2</sub> 4H <sub>5</sub> O  C <sub>1</sub> 9H <sub>3</sub> 4 (g)  E C <sub>1</sub> 0H <sub>2</sub> O <sub>3</sub>		<u>.:</u>	b=11.12Å	B=113°45'			Hölzel,250.
CH <sub>3</sub> CONH <sub>2</sub> (9)  [C,H,Q]  Ca(CH <sub>3</sub> COO)CI (9)  .5H <sub>2</sub> O  Ca <sub>3</sub> (C <sub>6</sub> H <sub>5</sub> O <sub>7</sub> ) <sub>2</sub> .4H <sub>2</sub> O  C <sub>2</sub> 4H <sub>50</sub> C <sub>2</sub> 4H <sub>50</sub> TE  C <sub>19</sub> H <sub>34</sub> (9)  TE  C <sub>10</sub> H <sub>2</sub> O <sub>3</sub> TE  C <sub>10</sub> H <sub>2</sub> O <sub>3</sub> TE  C <sub>10</sub> H <sub>2</sub> O <sub>3</sub> C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O			c=7.28Å	γ=79°34'			
CH <sub>3</sub> CONH <sub>2</sub> (g)  Ca(CH <sub>3</sub> OO)Cl (g)  Ca(CH <sub>3</sub> COO)Cl (H)  SH <sub>2</sub> O  Ca <sub>3</sub> (C <sub>6</sub> H <sub>5</sub> O <sub>7</sub> ) <sub>2</sub> ·4H <sub>2</sub> O  C <sub>2</sub> 4H <sub>50</sub> C <sub>2</sub> 4H <sub>50</sub> C <sub>19</sub> H <sub>34</sub> (g)	-			Z=1			
C,H,O    Ca(CH <sub>3</sub> COO)C    5H <sub>2</sub> O   Ca <sub>3</sub> (C <sub>6</sub> H <sub>5</sub> O <sub>7</sub> ) <sub>2</sub> .4H <sub>2</sub> O   C <sub>2</sub> 4H <sub>5</sub> O   C <sub>2</sub> 4H <sub>5</sub> O   C <sub>19</sub> H <sub>34</sub>   C <sub>19</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> O   C <sub>2</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O   C <sub>2</sub> H <sub>3</sub> O   C	{C"O(CH3)(NH2)]	Hex.	a=11.40Å c=13.50Å	¿=Z			Am.Min., 1976, 61,338 (Abs.); Hölzel 249 Encyc, Miner, Nam., 9
Ca(CH <sub>3</sub> COO)Cl .5H <sub>2</sub> O Ca <sub>3</sub> (C <sub>6</sub> H <sub>5</sub> O <sub>7</sub> ) <sub>2</sub> .4H <sub>2</sub> O C <sub>2</sub> 4H <sub>50</sub> C <sub>19</sub> H <sub>34</sub> TE C <sub>10</sub> H <sub>2</sub> O <sub>3</sub> TE C <sub>10</sub> H <sub>2</sub> O		Amorph.					Str.Tab.,498;RRW,17.
5H <sub>2</sub> O Ca <sub>3</sub> (C <sub>6</sub> H <sub>5</sub> O <sub>7</sub> ) <sub>2</sub> .4H <sub>2</sub> O C <sub>2</sub> 4H <sub>50</sub> C <sub>2</sub> 4H <sub>50</sub> TE C <sub>10</sub> H <sub>2</sub> O <sub>3</sub> TE C <sub>10</sub> H <sub>2</sub> O <sub>3</sub> TE C <sub>2</sub> H <sub>2</sub> O <sub>3</sub> C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O	t	Mon.	a=10.51Å	.9₀66=9			Acta Cryst., 1958, 11,745-746;
Ca <sub>3</sub> (C <sub>6</sub> H <sub>5</sub> O <sub>7</sub> ) <sub>2</sub> .4H <sub>2</sub> O C <sub>2</sub> 4H <sub>50</sub> C <sub>19</sub> H <sub>34</sub> (9) C <sub>10</sub> H <sub>22</sub> O <sub>3</sub> MgC <sub>2</sub> O <sub>4</sub> .2H <sub>2</sub> O C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O		P2 <sub>1</sub> /a	b=13.72Å c=6.82Å	Z=4			Hölzel,248;RRW,102.
C <sub>24</sub> H <sub>50</sub> C <sub>19</sub> H <sub>34</sub> (g) C <sub>10</sub> H <sub>22</sub> O <sub>3</sub> MgC <sub>2</sub> O <sub>4</sub> .2H <sub>2</sub> O C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O		Mon.	خ				Str.Tab.,495;Hölzel,248;RRW, 184.
C <sub>19</sub> H <sub>34</sub> (9) C <sub>10</sub> H <sub>22</sub> O <sub>3</sub> MgC <sub>2</sub> O <sub>4</sub> .2H <sub>2</sub> O C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O		Mon.	a=7.50Å	β=94°			Am.Min., 1965, 50, 2109 (Abs.);
C <sub>19</sub> H <sub>34</sub> [9] C <sub>10</sub> H <sub>22</sub> O <sub>3</sub> MgC <sub>2</sub> O <sub>4</sub> .2H <sub>2</sub> O C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O	-	_	b=4.99Å c=32.7Å	Z=2			RRW,201;Str.Tab.,496;Hölzel, 249.
C <sub>10</sub> H <sub>22</sub> O <sub>3</sub> MgC <sub>2</sub> O <sub>4</sub> .2H <sub>2</sub> O C <sub>5</sub> H <sub>3</sub> (NH <sub>2</sub> )N <sub>4</sub> O	19H34]		~	.85°	C <sub>I-XIX</sub> (2a)		Can.Min.,1995,33,711;Str.Tab.
		P2 <sub>1</sub>	b=7.458Å c=10.824Å		H <sub>-xxxIII</sub> (2a)		,496;RRW,214;Hölzel,249.
		Orth.	a=18.60Å	Z=16			Am.Min., 1965, 50, 2109 (Abs.);
-  -		Fdd2	b=23.00Å c=10.86Å				Str.Tab.,496;RRW,215;Hölzel, 249.
		Mon.	a=12.675Å	B=129.45°			Min.Mag.,1980,43,837-340;
		C2/c		Z=4			Hölzel, 248; Am. Min., 1981, 66, 439 (Abs.).
		Mon.	2				Encyc.Miner.Nam.,120;Min.
		P2 <sub>1</sub> /n	·				Mag., 1974, <u>39</u> , 889-890; Hölzel, 250.
HARTITE C20H34 (9)[C20H34]		Tric.	a=21.10Å	$\alpha = 103^{\circ}11^{\circ}$			Str.Tab.,496;Hölzel,249;Acta
		٦-	b=11.54Å	β=92°59'			Cryst., 1978, B34, 1311-1316.
			c=7.50Å	γ=80°35' Z=4			•
HOELITE C <sub>14</sub> H <sub>8</sub> O <sub>2</sub>		Mon.	a=15.81Å	$\beta = 102^{6}7'$			Hölzel,249.
		P2 <sub>1</sub> /a	b=3.967Å c=7.876Å	Z=2			
HUMBOLDTINE FeC.O4.2H,O {1∞}{C,O4Fe	{1∞}[C,O₄Fe(H,O),]	Mon.	a=12.04Å	B=127°34'	Fe(4e)C(8f)		SR,21,505-506; Hölzel,248;Str.
4		C2/c	b=5.58Å c=9.89Å		O <sub>I-III</sub> (8f)		Tab.,494;RRW,283-284.
IDRIALITE C <sub>22</sub> H <sub>14</sub>		Orth.	a=8.07Å	Z=4			Str. Tab., 497; Am. Min., 1965, 50,
			c=27.75Å				RRW,296.

# **ORGANIC MINERALS (cont.)**

NAME	CHEMICAL FORMULA	STRUCTURAL FORMULA	SPACE	UNIT CELL DIMENSIONS	IMENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
KARPATITE	C <sub>24</sub> H <sub>12</sub>		Mon.	a=16.25Å	B=111°10'			Am.Min.,1969,54,329(Abs.);
	! i		P2/c	b=4.638Å c=10.42Å	Z=2			RRW,119;Str.Tab.,496;Hölzel, 250.
KLADNOITE	C <sub>6</sub> H <sub>4</sub> (CO) <sub>2</sub> NH	{g}{C <sub>6</sub> H <sub>4</sub> (CO) <sub>2</sub> NH]	Mon. P2 <sub>1</sub> /n	a=22.83Å b=7.651Å c=3.810Å	β=91°36′ Z=4	C <sub>I-VIII</sub> (4e)N(4e) O <sub>I-II</sub> (4e)H <sub>I-V</sub> (4e)		Acta Cryst., 1972, <u>B28,</u> 415-418; Hölzel, 249.
KRATOCHVÍLITE	C <sub>13</sub> H <sub>10</sub>	[@][C <sub>13</sub> H <sub>10</sub> ]	Orth. Pnam	a=8.49Å b=5.721Å c=18.97Å	Z=4	C <sub>I-VI</sub> (8d)C <sub>VII</sub> (4c)		SR,19,583-584;Hölzel,249;Str. Tab.,496;Miner.Refer.Manual, 245.
MELLITE	A <sub>2</sub> C <sub>6</sub> (COO) <sub>6</sub> . 16H <sub>2</sub> O	Al <sub>2</sub> <sup>°</sup> (H <sub>2</sub> O) <sub>16</sub> {g}[C <sub>6</sub> (COO) <sub>6</sub> ]	Tet. P4 <sub>1</sub> /acd	a=15.53Å c=23.19Å	Z=8	AI(16e)O <sub>I-II</sub> (16e) O <sub>III-VIII</sub> (32g) C <sub>I-IV</sub> (32g)		Acta Cryst.,1973, <u>B29,</u> 26-31; RRW,390-391;Str.Tab.,495; Hölzel,249.
MINGUZZITE	K <sub>3</sub> Fe(C <sub>2</sub> O <sub>4</sub> ) <sub>3</sub> .3H <sub>2</sub> O		Mon.	β= 2	β=94°13.5'			RRW,407-408;Str.Tab.,494; Hölzel,248;Am.Min.,1956,41, 370(Abs.)
MOOLOOITE	CuC <sub>2</sub> O <sub>4</sub> .nH <sub>2</sub> O		orth.	a=5.35Å b=5.63Å c=2.56Å	Z=1			Min.Mag.,1986, <u>50,</u> 295-298; Hölzel,248.
OXAMMITE	(NH <sub>4</sub> ) <sub>2</sub> C <sub>2</sub> O <sub>4</sub> .H <sub>2</sub> O		Orth. P2 <sub>1</sub> 2 <sub>1</sub> 2	a=8.035Å b=10.309Å c=3.795Å	Z=2			Acta Cryst.,1972, <u>B28</u> ,3340- 3351;RRW,454;Str.Tab.,494; Hölzel,248;
PHYLLORETINE	C <sub>18</sub> H <sub>18</sub>		Orth. Pnn2	a=6.26Å b=8.52Å c=23.45Å	Z=4			Str.Tab.,496;Hölzel,249.
REFIKITE	C <sub>20</sub> H <sub>32</sub> O <sub>2</sub>		Orth. P2 <sub>1</sub> 2 <sub>1</sub> 2	a=10.43Å b=22.35Å c=7.98Å	<b>Z=4</b>			Am.Min.,1965, <u>50,</u> 2109-2110 (Abs.);RRW,513;Str.Tab.,497; Hölzel,248.
SIMONELLITE	C <sub>19</sub> H <sub>24</sub>		Orth. Pnaa	a=9.231Å b=9.134Å c=36.01Å	Z=8			Am.Min.,1970 <u>,55,</u> 1818(Abs.); Str.Tab.,496;Hölzel,249.
STEPANOVITE	NaMgFe(C <sub>2</sub> O <sub>4</sub> ) <sub>3</sub> .8-9H <sub>2</sub> O		Trig.	a=9.28Å c=36.67Å	Z=6			Am.Min.,1964,49,442-443 (Abs.);Str.Tab.,495;RRW,578;
UREA	CO(NH <sub>2</sub> ) <sub>2</sub>	{B}[C"O(NH <sub>2</sub> ) <sub>2</sub> ]	Tet. P 42 <sub>1</sub> m	a=5.646Å c=4.701Å	Z=2		{g}[C <sup>r</sup> O(NH <sub>2</sub> ) <sub>2</sub> ] UREA	Min.Mag.,1973, <u>39</u> ,346-348; Hölzel,249;Kitaigorodskii,1961, 153-154.
URICITE	C <sub>5</sub> H <sub>4</sub> N <sub>4</sub> O <sub>3</sub>	{g}[C₅H₄N₄O₃]	Mon. P2 <sub>1</sub> a	a=14.464Å b=7.403Å c=6.208Å	β=65.10° Z=4			Acta Cryst., 1965 <u>, 19</u> ,286-287; Hölzel,250.
WEDDELLITE	CaC <sub>2</sub> O <sub>4</sub> .2H <sub>2</sub> O	(H <sub>2</sub> O) <sub>2</sub> Ca {g}{C <sub>2</sub> O <sub>4</sub> ]	Tet. I4/m	a=12.37Å c=7.357Å	Z=8	Ca(8h)C(16i) O <sub>I-II</sub> (16i)		Am.Min., 1980, <u>65,</u> 327-334; Acta Cryst., 1965, <u>18,</u> 917-921; Hölzel, 248.

# **ORGANIC MINERALS (cont.)**

NAME	CHEMICAL FORMULA	STRUCTURAL FORMULA	SPACE GROUP	UNIT CELL DIMENSIONS	MENSIONS	EQUIVALENT POSITIONS	STRUCTURE TYPE	REFERENCES
WHEATLEYITE	Na <sub>2</sub> Cu(C <sub>2</sub> O <sub>4</sub> ) <sub>2</sub>		(Tric.)	a=7.559Å	$\alpha = 76.65^{\circ}$	a=7.559Å α=76.65° Cu(1a)Na(2i)		Am.Min., 1986, 71, 1240-1242;
	.2H <sub>2</sub> O		<u>Т</u>	b=9.665Å	$\beta = 103.67^{\circ}$	β=103.67° O <sub>I-V</sub> (2i)C <sub>I-II</sub> (2i)		Acta Cryst., 1980, <u>B36, 2145</u> -
			-	c=3.589Å	γ=109.10° Z=1			2147; Hölzel,248.
WHEWELLITE CaC <sub>2</sub> O <sub>4</sub> .H <sub>2</sub> O	CaC <sub>2</sub> O <sub>4</sub> .H <sub>2</sub> O		Mon.	a=6.290Å B=109.46° Ca <sub>I-II</sub> (4e)	B=109.46°	Ca <sub>l-II</sub> (4e)		Am.Min., 1980, 65, 327-334; Am.
			P2,/c	b=14.583Å Z=8	Z=8	C <sub>I-IV</sub> (4e)		Min., 1968, 53, 455-463; Hölzel,
				c=10.116Å		O <sub>I-VIII</sub> (4e)		248;RRW,669;Str.Tab.,494.
ZHEMCHUZHNI-	NaMg(AI,Fe)		Trig.	a=16.67Å Z=6	9=Z			Am.Min., 1964, 49, 442-443
KOVITE	(C <sub>2</sub> O <sub>4</sub> ) <sub>3</sub> .8H <sub>2</sub> O			c=12.51Å				(Abs.);RRW,686;Str.Tab.,495;
			_					070 010

Tables of mineral structure types

Table 64S

### A<sub>m</sub>B<sub>n</sub>.nAq.

### MINERALS TENTATIVELY CLASSIFIED

  $\begin{array}{ll} \textbf{ERIOCHALCITE} & Al^0[Cl_2(H_2O)_2]^{Os} & Pbmn \\ \textbf{NICKELBISCHOFITE} & Ni^{[7/6]}[(H_2O)_6Cl_2] & C2/m \\ \textbf{SCHOEPITE} & U^{[7]}[O_3(H_2O)_{12}] & P2_1ca \\ \textbf{SIDWILLITE} & Mo^0[O_3(H_2O)_2]^{o?} & P2_1/n \\ \end{array}$ 

### MINERALS NOT YET CLASSIFIED

ANTHONYITE  $Cu(OH,CI)_2.3H_2O$  Mon. s.g.? BARIANDITE  $V_5O_{12}.6H_2O$  Cc ... CALUMETITE  $Cu(OH,CI)_2.2H_2O$  S.? LENOBLITE  $V_2O_4.2H_2O$  S.? MASUYITE  $UO_3.2H_2O$  Pcna METASCHOEPITE  $UO_3.1-2H_2O$  Pbna METASTUDTITE  $UO_4.2H_2O$  Immm MEYMACITE  $WO_3.2H_2O$  Amorph.

NAVAJOITE V<sub>2</sub>O<sub>5</sub>.3H<sub>2</sub>O Mon. s.g.? OPAL SiO<sub>2</sub>.nH<sub>2</sub>O Amorph. ROKHÜNITE FeCl<sub>2</sub>.2H<sub>2</sub>O C2/m SILHYDRITE Si<sub>3</sub>O<sub>6</sub>.H<sub>2</sub>O Orth. s.g.? SINJARITE CaCl<sub>2</sub>.2H<sub>2</sub>O Tet. s.g.? STUDTITE UO<sub>4</sub>.4H<sub>2</sub>O C2 ... TUNGSTITE WO<sub>3</sub>.H<sub>2</sub>O Pmnb

### A<sub>p</sub>B<sub>q</sub>C<sub>r</sub>.nAq.

### **CLOSE-PACKED**

MANJIROITE Mn<sub>8</sub>°[(Na,K)O<sub>16</sub>(H<sub>2</sub>O)<sub>n</sub>]<sup>chh</sup> I 4/m (Dist.d.Hollandite)

**GROUP** 

NATRON [ {g}[Na2°(H2O)10] {g}[CtO3]c ] Cc

SHEET

**GYPSUM**  $2\infty[Ca^{[6+2]}(H_2O)_2S^tO_4]$  | 2/a

 $\begin{array}{ll} \text{Deriv.:} & \text{CHURCHITE - (Nd)} & 2\infty[Nd^{[\theta+2]}(H_2O)_2P^tO_4] & A2/a... \\ & \text{CHURCHITE - (Y)} & 2\infty[(Y,Er)^{[\theta+2]}(H_2O)_2P^tO_4] & A2/a... \\ \end{array}$ 

### **FRAMEWORK**

KIESERITE 300[Mg°StO4(H2O)] C2/c

VARISCITE (H<sub>2</sub>O)<sub>2</sub>{3∞}[Al°P<sup>t</sup>O<sub>4</sub>] Pbca (Basic str.Metavariscite)

 $\begin{array}{lll} \mbox{Deriv.:} & \mbox{GUNNINGITE} & \mbox{$3 \mbox{$\infty$}[(Zn,Mn)^\circ S^iO_4(H_2O)]$} & \mbox{$A2/a$} \\ & \mbox{$POITEVINITE} & \mbox{$3 \mbox{$\infty$}][(Cu,Fe,Zn)^\circ S^iO_4(H_2O)]$} & \mbox{$P$} & \mbox{$1 \mbox{$1 \mbox{$N$}}$} \\ & \mbox{$SZMIKITE} & \mbox{$3 \mbox{$3 \mbox{$M$}]}[Fe^\circ S^iO_4(H_2O)]$} & \mbox{$A2/a$} \\ & \mbox{$SZOMOLNOKITE} & \mbox{$3 \mbox{$3 \mbox{$M$}]}[Fe^\circ S^iO_4(H_2O)]$} & \mbox{$A2/a$} \\ \end{array}$ 

Pop.: MANSFIELDITE (H<sub>2</sub>O)<sub>2</sub>(3∞)[Al<sup>2</sup>As<sup>2</sup>O<sub>4</sub>] SCORODITE (H<sub>2</sub>O)<sub>2</sub>(3∞)[Fe<sup>0</sup>As<sup>2</sup>O<sub>4</sub>] STRENGITE (H<sub>2</sub>O)<sub>2</sub>(3∞)[Fe<sup>0</sup>P<sup>1</sup>O<sub>4</sub>]

Deriv.: KOLBECKITE (H<sub>2</sub>O)<sub>2</sub>(3ω)[Sc°PO<sub>4</sub>] P2<sub>1</sub>/m METAVARISCITE (H<sub>2</sub>O)<sub>2</sub>(3ω)[Al°PO<sub>4</sub>] P2<sub>1</sub>/n PHOSPHOSIDERITE (H<sub>2</sub>O)<sub>2</sub>(3ω)[Fe°PO<sub>4</sub>] P2<sub>1</sub>/n Table 65S

### A<sub>p</sub>B<sub>q</sub>C<sub>r</sub>.nAq.(cont.)

### **MINERALS TENTATIVELY CLASSIFIED**

AHFELDITE Ni<sup>[4+2]</sup>Se<sup>[3n]</sup>[O<sub>3</sub>(H<sub>2</sub>O)<sub>2</sub>] P2<sub>1</sub>/n(=Cobaltomenite) **ALUNOGEN**  $Al_2^o(H_2O)_{17}\{g\}[SO_4]_3$  P  $\bar{1}$  **APLOWITE** (Co,Mn,Ni) $^oS[O_4(H_2O)_4]$  P2<sub>1</sub>/n **ARAVAIPAITE** Pb3Al°[F9(H2O)] P1 ... **BARNESITE**  $Na_2^{[4+2]}V_6^{[550]}[O_{16}(H_2O)_3]$  P2/m BARRERITE (Na,K,Ca)<sub>5</sub><sup>[8]</sup>(H<sub>2</sub>O)<sub>17</sub>(3∞)[(Si,Al)<sub>24</sub>tO<sub>48</sub>] Amma (≈Stilbite,Zeolite) BELINGERITE {3\infty}[Cu^0\_3{\g}][1^{[3n]}O\_3]\_6(H\_2O\_2] P 1 **BIANCHITE** (Zn,Fe) S[O<sub>4</sub>(H<sub>2</sub>O)<sub>6</sub>] C2/c (=Hexahydrite) BIEBERITE Co°St[O4(H2O)7] P21/C BONATITE {2\infty}[Cu°StO4(H2O)3] Cc **BOOTHITE** Cu<sup>6</sup>S<sup>†</sup>[O<sub>4</sub>(H<sub>2</sub>O)]<sub>7</sub> P2<sub>1</sub>/c **BROCKITE** (Ca,Th,Ce)<sup>[B]</sup>P<sup>†</sup>[O<sub>4</sub>(H<sub>2</sub>O)] P622 (=Rhabdophane-(Ce)) CARNALLITE KoMgo [Cl3(H2O)6] Pnna CHALCANTHITE  $(H_2O)\{1\infty\}[Cu^0S^tO_4(H_2O)_4] P \overline{1}$ (=Pentahydrite) CHALCOMENITE Cu°Se<sup>[3n]</sup>[O<sub>3</sub>(H<sub>2</sub>O)<sub>2</sub>] P2<sub>1</sub>2<sub>1</sub>2<sub>1</sub> (=Teineite. ≈Ahlfeldite) CHALCOPHANITE (Zn,Fe,Mn)°Mn<sub>3</sub>°[O<sub>7</sub>(H<sub>2</sub>O)<sub>3</sub>] R 3 CLARINGBULLITE Cu°Cu<sub>3</sub>P[(OH)<sub>7</sub>Cl(H<sub>2</sub>O)<sub>n</sub>] P6<sub>9</sub>/mmc COBALTOMENITE Co°Se<sup>[3n]</sup>[O<sub>3</sub>(H<sub>2</sub>O)<sub>2</sub>] P2<sub>1</sub>/n(=Ahlfeldite) **COQUIMBITE**  $(H_2O)_6\{g\}[Fe_3^\circS_6^\daggerO_{24}(H_2O)_6]\{g\}[Fe^\circ(H_2O)_6]$ P 31c COYOTEITE NatFe3t[S5(H2O)2]n P1...(Subs.def.d.Wurtzite) CUPROTUNGSTITE Cu<sub>3</sub>°W<sub>2</sub>¹[O<sub>3</sub>(H<sub>2</sub>O)<sub>2</sub>] P4<sub>1</sub>2<sub>1</sub>2... (≈Lindgrenite) CYMRITE Ba[8][200][(Si,AI)4tO8(H2O)] P21 DACAHIARDITE (Na,K,Ca<sub>0.5</sub>)<sub>4</sub>(H<sub>2</sub>O)<sub>18</sub>(3∞)[Al<sub>4</sub><sup>t</sup>Si<sub>20</sub><sup>t</sup>O<sub>48</sub>] C2/m (Zeolite) DIOPTASE Cu<sub>6</sub>[4+2][(H<sub>2</sub>O)<sub>6</sub>{g}[Si<sub>6</sub>tO<sub>18</sub>]] R 3 **DWORNIKITE**  $3\infty[(Ni,Fe)^{\circ}(H_{2}O)S^{i}O_{4}]$  C2/c (=Kieserite) **EMMONSITE**  $Fe_{2}^{\circ}Te_{3}^{(5b)}[O_{9}(H_{2}O)_{2}]$  P  $\bar{1}$  ( $\approx$ Mackayite) **EPSOMITE**  $Mg^{\circ}S^{i}[O_{4}(H_{2}O)_{7}]$  P2<sub>1</sub>2<sub>1</sub>2<sub>1</sub> ERDITE Na<sup>[6]</sup>Fe<sup>t</sup>[S<sub>2</sub>(H<sub>2</sub>O)<sub>2</sub>] C2/c .. ERYTHROSIDERITE Fe<sup>o</sup>[Cl<sub>5</sub>K<sub>2</sub>(H<sub>2</sub>O)] Pnma FERRIERITE (Orthorhombic)  $(Mg,K,Ca)_{4.4}^{\circ}(H_2O)_{18}(3\infty)[(Si,Al)_{36}^{\circ}O_{72}]$  Pnnm (≈Mordenite,Zeolite) **FERRITUNGSTITE**  $(K,Ca)_{0.2}^{cb}\square_{0.8}^{cb}(W,Fe)_{2}^{[6]}[(O,OH)_{6}(H_{2}O)\square]^{Qs}$  Fd  $\bar{3}$ m (Defect deriv. Pyrochlore) FERROHEXAHYDRITE  $Fe^{\circ}S^{t}[O_{4}(H_{2}O)_{6}]$  C2/c GERSTLEYITE  $Na_{2}^{[4+2]}\{1\infty\}\{(Sb,As)_{8}^{[3n]}S_{13}(H_{2}O)_{2}\}$  Cm GONNARDITE (Na,Ca)2°(H2O)3(300)[(Si,Al)5<sup>t</sup>O10] Tet. s.g.? (≈Natrolite,Zeolite) **GOSLARITE** Zn°S $^{1}$ [O<sub>4</sub>(H<sub>2</sub>O)<sub>7</sub>] P2<sub>1</sub>2<sub>1</sub>2<sub>1</sub> (=Epsomite) **HEWETTITE** Ca $^{[7/8]}$ V<sub>6</sub> $^{0}$ [O<sub>16</sub>(H<sub>2</sub>O)<sub>9</sub>] P2<sub>1</sub>/m HEXAHYDRITE  $Mg^{\circ}S^{\dagger}[O_4(H_2O)_6]$  C2/c HEXAHYDROBORITE  $Ca^{(8)}B_2^{\dagger}[(OH)_8(H_2O)_2]$  P2/a HOPEITE Zn°Zn₂<sup>t</sup>P₂<sup>t</sup>[O<sub>8</sub>(H₂O)₄] Pnma (≈Vivianite) **HYDROTUNGSTITE**  $W^{\circ}[O_2(OH)_2(H_2O)]$  P2/m **IKAITE**  $Ca^{[8]}(H_2O)_6\{g\}[C^{\dagger}O_3]$  C2/c  $\begin{array}{ll} \textbf{ILESITE} & (Mn,Zn,Fe)^{\circ}S^{\circ}[O_{4}(H_{2}O)_{4}] & P2_{1}/n \\ \textbf{KILLALAITE} & Ca_{2}^{\circ}Ca^{7/}Si_{2}^{\circ}[O_{7}(H_{2}O)] & P2_{1}/m \\ \textbf{KLEINITE} & (Cl,SO_{4})_{n}(H_{2}O)\{\infty\}[N^{i}Mg_{2}^{(2j_{4}ch_{3})}]^{h} & P6_{3}/mmc \\ \end{array}$ (≈β-Tridymite) KONINCKITE (H<sub>2</sub>O)<sub>3</sub>(3∞)[Fe<sup>o</sup>P<sup>t</sup>O<sub>4</sub>] Tet. s.g.? (≈Scorodite) **KORNELITE**  $(H_2O){3\infty}[Fe_2{}^0S_3{}^1O_{12}(H_2O)_6]$  P21/n

**KRAUSKOPFITE** Ba<sup>[9]</sup> $\{1\infty\}[Si_2^tO_5(H_2O)_3]$  P2<sub>1</sub>/c KREMERSITE Fe<sup>o</sup>[Cl<sub>5</sub>(NH<sub>4</sub>,K)<sub>2</sub>(H<sub>2</sub>O)] Pnma **LANTHANITE** - (Ce)  $(H_2O)_8\{2\infty\}\{(Ce, La, Nd)_2^{[10]}\{g\}\{C^tO_3\}_3\}$ Pbnb LANTHANITE - (La) (H<sub>2</sub>O)<sub>8</sub>(2∞){(La,Ce)<sub>2</sub><sup>[10]</sup>(g){C<sup>t</sup>O<sub>3</sub>]<sub>3</sub> Pbnb LANTHANITE - (Nd) (H2O)8(200)[(Nd,La)2[10](g)(CtO3]3 LUDLAMITE (Fe,Mg,Mn)3°P2<sup>t</sup>[O8(H2O)4] P21/a (≈Vivianite) MALLARDITE Mn°S¹[O₄(H₂O)₁] P2₁/c (≈Melanterite) MELANTERITE Fe°S [O<sub>4</sub>(H<sub>2</sub>O)<sub>7</sub>] P2<sub>1</sub>/c METAHEWETTITE Ca°V<sub>6</sub> O<sub>16</sub>(H<sub>2</sub>O)<sub>3</sub>] A2/m METAKÖTTIGITE (Zn,Fe)3°AS2<sup>t</sup>[O8(H2O,OH)8] P 1 (≈Symplesite) METAROSSITE CaacbV2[5by][O6(H2O)2] P 1 ... METASWITZERITE (Mn,Fe)3°P2<sup>t</sup>[O8(H2O)4] P2<sub>1</sub>/C (≈Ludlamite) MIRABILITE Na<sub>2</sub>°S¹[O<sub>4</sub>(H<sub>2</sub>O)<sub>10</sub>] P2<sub>1</sub>/c MITSCHERLICHITE Cu°[K<sub>2</sub>°C<sub>14</sub>(H<sub>2</sub>O)<sub>2</sub>] P4<sub>2</sub>/mnm MOORHOUSEITE (Co,Ni,Mn)°St[O4(H2O)6] C2/c (=Hexahydrite) **MORENOSITÉ** Ni°S<sup>t</sup>[O<sub>4</sub>(H<sub>2</sub>O)<sub>7</sub>] P2<sub>1</sub>2<sub>1</sub>2<sub>1</sub> (=Epsomite) **MOUNTAINITE** (Ca,Na<sub>2</sub>,K<sub>2</sub>)<sub>2</sub><sup>[6]</sup>(H<sub>2</sub>O)<sub>3</sub>{2 $\infty$ }[Si<sub>4</sub>O<sub>10</sub>] P2/c **NEKOITE**  $Ca_3^o(H_2O)_7\{2\infty\}[Si_6^tO_{15}]$  P1 NESQUEHONITE  $Mg^{o}(H_{2}O)_{3}\{g\}[C^{tr}O_{3}]$  P2<sub>1</sub>/n NICKELHEXAHYDRITE (Ni,Mg,Fe)°S<sup>t</sup>[O<sub>4</sub>(H<sub>2</sub>O)<sub>6</sub>] C2/c (=Hexahydrite) NITROMAGNESITE Mg°(H2O)6[g][NtO3]2 P21/C **OKENITE**  $Ca_{10}^{o}(H_2O)_{18}O\{2\infty\}[Si_6{}^tO_{15}]_3$  P  $\overline{1}_{\_}(\approx Nekoite)$ PARACOQUIMBITE Fe°S3<sup>t</sup>[O<sub>12</sub>(H<sub>2</sub>O)<sub>9</sub>] R 3 PARAHOPEITE Zn°Zn2<sup>t</sup>P2[O<sub>8</sub>(H2O)4] P 1 (Dist.d.Hopeite) PASCOITE Ca<sub>3</sub><sup>[7]</sup>V<sub>10</sub>°[O<sub>28</sub>(H<sub>2</sub>O)<sub>17</sub>] | 2 ... **PAULINGITE**  $(K,Ca,Na,Ba)_{12}(H_2O)_{25}\{3\infty\}[(Si,Al)_{24}^tO_{98}]$ I m3m (≈Sodalite.Zeolite) PENTAHYDRITE Mg°S<sup>t</sup>[O<sub>4</sub>(H<sub>2</sub>O)<sub>5</sub>] P 1 (≈Chalcanthite) PHAUNOUXITE {2\infty}[Ca^{[8]}Ca\_2^{[7]}As\_2^tO\_8(H\_2O)\_{11}] P 1 (≈Rauenthalite) PHOSPHOFERRITE (Fe,Mn)3°P2<sup>t</sup>(O8(H2O)3] Pbna (≈Reddingite) QUENSTEDTITE  $Fe_2^{\circ}S_3^{t}[O_{12}(H_2O)_{11}]$  P  $\overline{1}$ RALSTONITE  $(AI,Mg)_2^{\circ\circ}Na_{0.4}^{[6]}\Box_{1.6}^{[6]}[(F,OH)_6(H_2O)\Box]^{Ge}$ (Defect.d.Pyrochlore) **RAUENTHALITE** Ca<sup>[8]</sup>Ca<sub>2</sub><sup>[7]</sup>As<sub>2</sub><sup>t</sup>[O<sub>8</sub>(H<sub>2</sub>O)<sub>10</sub>] P 1 (≈Phaunouxite) **REDDINGITE** Mn<sub>3</sub>°P<sub>2</sub><sup>t</sup>[O<sub>8</sub>(H<sub>2</sub>O)<sub>3</sub>] Pbna (≈Phosphoferrite) **RETGERSITE** Ni<sup>o</sup>S<sup>t</sup>[O<sub>4</sub>(H<sub>2</sub>O)<sub>6</sub>] P4<sub>1</sub>2<sub>1</sub>2 (=Hexahydrite) REVDITE 3∞[Na2°Sl2<sup>t</sup>O5(H2O)5] C2 (≈Vlasovite) RHABDOPHANE - (Ce) (Ce,La)[8]Pt[(O<sub>4</sub>(H<sub>2</sub>O)] P6<sub>2</sub>22 RHABDOPHANE - (La) (La,Ce)<sup>[8]</sup>P<sup>1</sup>[(O<sub>4</sub>(H<sub>2</sub>O)] P6<sub>2</sub>22 RHABDOPHANE - (Nd) (Nd,Ce,La)<sup>[8]</sup>P<sup>1</sup>[(O<sub>4</sub>(H<sub>2</sub>O)] P6<sub>2</sub>22 **RÖMERITE** [{g}|Fe $^{\circ}S_{2}^{+}O_{8}(H_{2}O)_{4}]_{2}$ {g}|Fe $^{\circ}(H_{2}O)_{6}$ ]  $\stackrel{\frown}{P}$   $\stackrel{\frown}{1}$  **ROSSITE**  $_{3}\infty$ [Ca $^{[8]}V_{2}^{[5]}O_{6}(H_{2}O)_{4}$ ]  $\stackrel{\frown}{P}$   $\stackrel{\frown}{1}$ **ROZENITE** Fe°S¹[O<sub>4</sub>(H<sub>2</sub>O)<sub>4</sub>] P2<sub>1</sub>/n (=Laumontite) **SIDEROTIL** (Fe,Cu) ${}^{\circ}S^{t}[O_{4}(H_{2}O)_{5}]$  P  $\overline{1}$  (=Chalcanthite) STARKEYITE {g}[Mg2°S2<sup>t</sup>O8(H2O)8] P21/n STRACZEKITE  $V_8$   $O_{20}(H_2O)_3(Ca,K,Ba)$   $O_{20}(H_2O)_3(Ca,K,Ba)$ **SVETLOZARITE** (Ca;K,Na)<sub>3</sub>{3∞}[(H<sub>2</sub>O)<sub>12</sub> (Si,Al)<sub>24</sub>O<sub>48</sub>] Ccma?( ≈Dachiardite) **SWITZERITE** (Mn,Fe)<sub>3</sub>°P<sub>2</sub><sup>t</sup>[O<sub>8</sub>(H<sub>2</sub>O)<sub>7</sub>] P2<sub>1</sub>/a

Table 66S

### $A_pB_qC_r.nAq.(cont.)$

### **MINERALS TENTATIVELY CLASSIFIED (cont.)**

TACHYHYDRITE Ca°Mg₂°[Cl<sub>6</sub>(H₂O)₁2] R  $\bar{3}$ (≈Carnalite) TEINEITE Cu<sup>10</sup><sup>1</sup>Tel·<sup>10</sup><sup>1</sup>[O₃.(H₂O)₂]P2₁2₁2₁(=Chalcomenite) TENGERITE-{Y}  $2\infty[Y_2^{[9]}\{g\}[C^{tr}O_3]_3(H_2O)_2]$  P2₁2₁2₁ (≈Kimuraite) TETRANATROLITE (Na,K)₂°(H₂O)₂{3∞}[(Si,Al)₅<sup>t</sup>O₁₀] (≈Natrolite,Zeolite) THERMONATRITE Na[6]Na[5by](H₂O){g}[C^{tr}O\_3] P2₁ab TODOROKITE (Mn,Mg,Al)₅°[(Na,Ca,K,Ba,Sr)₁,νO₁₂ (H₂O)₃₄]°<sup>n</sup> P2/m (≈Hollandite) TRISTRAMITE (Ca,U,Fe)[8](P,S)<sup>t</sup>[O₄(H₂O)] P6₂22 (=Rhaudophane - (Ce)) VIVIANITE Fe₃°P₂<sup>t</sup>[O<sub>8</sub>(H₂O)<sub>8</sub>] C2/m

$$\label{eq:posterior} \begin{split} &\text{Pop.: ANNABERGITE } \text{Nis}^{\circ}\text{Asz}^{1}_{2}[O_{\delta}(H_{2}O)_{\delta}] \\ &\text{BARICITE } \text{(Mg,Fe),}^{\circ}\text{P}_{2}^{-}[O_{\delta}(H_{2}O)_{\delta}] \\ &\text{ERYTHRITE } \text{Cos}^{\circ}\text{Asz}^{1}_{2}[O_{\delta}(H_{2}O)_{\delta}] \\ &\text{HORNESITE } \text{Mg,}^{\circ}\text{Asz}^{1}_{2}[O_{\delta}(H_{2}O)_{\delta}] \\ &\text{KÖTTIGITE } \text{Mg,}^{\circ}\text{Asz}^{1}_{2}[O_{\delta}(H_{2}O)_{\delta}] \\ &\text{PARASYMPLESITE } \text{Fe,}^{\circ}\text{Asz}^{1}_{2}[O_{\delta}(H_{2}O)_{\delta}] \\ &\text{SYMPLESITE } \text{Fe,}^{\circ}\text{Asz}^{1}_{2}[O_{\delta}(H_{2}O)_{\delta}] \\ &\text{Deriv.: } \text{BOBIERRITE } \text{Mg,}^{\circ}\text{P}_{2}^{1}[O_{\delta}(H_{2}O)_{\delta}] \text{ C2/c} \\ &\text{MANGANESEHÖRNESITE } \text{(Mn,Mg)}_{3}^{\circ}\text{Asz}^{1}_{2}[O_{\delta}(H_{2}O)_{\delta}] \text{ P2-1/c} \\ \end{split}$$

**WARIKAHNITE**  $3\infty[Zn_3^{[4/5/6]}As_2^{t}O_8(H_2O)_2]$  P  $\bar{1}$  **ZINCMELANTERITE**  $(Zn,Cu,Fe)^{\circ}S^{t}[O_4(H_2O)_7]$  P2<sub>1</sub>/c

### MINERALS NOT YET CLASSIFIED

**ADMONTITE Mg2B12O20.15H2O P21/c** APACHITE Cu<sub>9</sub>Si<sub>10</sub>O<sub>29</sub>.11H<sub>2</sub>O Mon. s.g.? AURORITE (Mn,Ag,Ca)Mn<sub>3</sub>O<sub>7</sub>.3H<sub>2</sub>O P 1 ... BASSANITE CaSO4.0.5H2O A2 BAURANOITE BaU2O7.4-5H2O S.? BILINITE Fe<sub>3</sub>(SO<sub>4</sub>)<sub>4</sub>.22H<sub>2</sub>O P2 ? BOYLEITE (Zn,Mg)SO<sub>4</sub>.4H<sub>2</sub>O P2<sub>1</sub>/n BRÜGGENITE Ca(IO<sub>3</sub>)<sub>2</sub>.H<sub>2</sub>O P2<sub>1</sub>/c CADWALADERITE AICI(OH)2.4H2O Amorph. CALCIOURANOITE (Ca,Ba,Pb,K,Na)U2O7.5H2O S.? CALKINSITE - (Ce) (Ce,La)<sub>2</sub>(CO<sub>3</sub>)<sub>3</sub>. 4H<sub>2</sub>O P2<sub>1</sub>22<sub>1</sub> CARLHINTZEITE Ca<sub>2</sub>AIF<sub>7</sub>.H<sub>2</sub>O C 1.. CHVALETICEITE (Mn,Mg)SO4.6H2O C2/C CLINOCHALCOMENITE CuSeO3.2H2O P21/n CUZTICITE Fe<sub>2</sub>TeO<sub>6</sub>.3H<sub>2</sub>O Hex. s.g.? FERRIMOLYBDITE Fe(MoO<sub>4</sub>)<sub>3</sub>.7H<sub>2</sub>O Pmmn FERVANITE Fe<sub>4</sub>(VO<sub>4</sub>)<sub>4</sub>.5H<sub>2</sub>O Mon. s.g.? FRANCONITE Na2Nb4O11.9H2O Mon. s.g.? GEARKSUTITE CaAI(F,OH)5.H2O S.? GERASIMOVSKITE (Mn,Ca)(Nb,Ti)<sub>5</sub>O<sub>12</sub>.9H<sub>2</sub>O Amorph. GILALITE Cu<sub>5</sub>Si<sub>6</sub>O<sub>17</sub>.7H<sub>2</sub>O Mon. s.g.? GINORITE Ca<sub>2</sub>B<sub>14</sub>O<sub>23</sub>.8H<sub>2</sub>O P2<sub>1</sub>/a GRAEMITE CuTeO3.H2O Pcmm HANNEBACHITE CaSO<sub>3</sub>.0.5H<sub>2</sub>O Pbna HELLYERITE NiCO3.6H2O C2/c **HENDERSONITE**  $Ca_2V_9O_{24}.8H_2O$  Pnam ... HILLEBRANDITE Ca2SiO4.H2O Cmc21 HOCHELAGAITE (Ca,Na,Sr)Nb<sub>4</sub>O<sub>11</sub>.8H<sub>2</sub>O Mon. s.g.? JOKOKUITE MnSO<sub>4</sub>.5H<sub>2</sub>O P 1 KAATIALAITE FeAs<sub>3</sub>O<sub>9</sub>.6-8H<sub>2</sub>O P2<sub>1</sub> ... KANKITE FeAsO<sub>4</sub>. 3.5H<sub>2</sub>O Mon. s.g? KORSHUNOVSKITE Mg<sub>2</sub>Cl(OH)<sub>3</sub>.3.5-4H<sub>2</sub>O Tric. s.g.? LANSFORDITE MgCO<sub>3</sub>.5H<sub>2</sub>O P2<sub>1</sub>/m LAUSENITE Fe<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub>.6H<sub>2</sub>O Mon. s.g.?

MANDARINOITE Fe2(SeO3)3.6H2O P21/c MANGANBELYANKINITE (Mn,Ca)(Ti,Nb)<sub>5</sub>O<sub>12</sub>.9H<sub>2</sub>O Amorph. MEIXNERITE Mg<sub>6</sub>Al<sub>2</sub>(OH)<sub>18</sub>.4H<sub>2</sub>O R 3m ●MELANOVANADITE CaV<sub>4</sub>O<sub>10</sub>.5H<sub>2</sub>O P 1 META-ALUNOGEN Al<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub>.14H<sub>2</sub>O Orth. s.g.? METACALCIOURANOITE (Ca,Na,Ba)U2O7. 2H2O s.g.? METASCHODERITE AI(PO4, VO4).3H2O P2/m METAVANDENDRIESSCHEITE PbU7O22.nH2O Pmma? MONOHYDROCALCITE CaCO<sub>3</sub>.H<sub>2</sub>O P3<sub>1</sub>21 ... MUNIRITE NaVO<sub>3</sub>.1.9H<sub>2</sub>O P2<sub>1</sub>/a MUSKOXITE Mg7Fe4O13.10H2O Trig. s.g.? NEOTOCITE (Mn,Fe)SiO3.H2O Amorph. NINGYOITE (U,Ca,Ce)<sub>2</sub>(PO<sub>4</sub>)<sub>2</sub>. 1-2H<sub>2</sub>O P222 ... **ONITROCALCITE** Ca(NO<sub>3</sub>)<sub>2</sub>.4H<sub>2</sub>O P2<sub>1</sub>/c ORICKITE CuFeS2.nH2O Hex. s.g.? RANCIÉITE (Ca,Mn)Mn<sub>4</sub>O<sub>9</sub>. 3H<sub>2</sub>O Hex. S.g.? RICHETITE PbU<sub>4</sub>O<sub>13</sub>.4H<sub>2</sub>O P1 .. SCHIEFFELINITE Pb(Te,S)O<sub>4</sub>.H<sub>2</sub>O Cmcm SCHÖLLHORNITE Na<sub>0.3</sub>CrS<sub>2</sub>.H<sub>2</sub>O R3m ... SCHUBNELITE FeVO4.H2O P 1 SIMONKOLLEITE Zn5(OH)8Cl2.H2O R 3m SIMPLOTITE CaV<sub>4</sub>O<sub>9</sub>.5H<sub>2</sub>O A2/m ... STEIGERITE AIVO<sub>4</sub>.3H<sub>2</sub>O P2<sub>1</sub>/m ... STERLINGHILLITE Mn<sub>3</sub>(AsO<sub>4</sub>)<sub>2</sub>.4H<sub>2</sub>O S.? TAKANELITE (Mn,Ca)Mn<sub>4</sub>O<sub>9</sub>.H<sub>2</sub>O Hex. s.g.? TERTSCHITE Ca<sub>4</sub>B<sub>10</sub>O<sub>19</sub>.20H<sub>2</sub>O Mon. s.g.? TRABZONITE Ca4Si3O10.2H2O P21 ... URANOSPHAERITE Bi<sub>2</sub>U<sub>2</sub>O<sub>9</sub>.3H<sub>2</sub>O Orth. s.g.? VANDENDRIESSCHEITE PbU7O22.12H2O Pmma ... WÖLSENDORFITE (Pb,Ca)U2O7.2H2O C222 WOODRUFFITE (Zn,Mn)Mn<sub>3</sub>O<sub>7</sub>.1-2H<sub>2</sub>O P 4 ZIRCOSULFATE Zr(SO<sub>4</sub>)<sub>2</sub>.4H<sub>2</sub>O Fddd

Table 67S

### $A_pB_qC_rD_s.nAq.$

### **CLOSE-PACKED**

CLINOHEDRITE Ca°Zn<sup>†</sup>Si<sup>†</sup>[O<sub>4</sub>(H<sub>2</sub>O)]<sup>c</sup> Cc JUNITOITE Ca°Zn<sup>†</sup>Si<sub>2</sub><sup>†</sup>[O<sub>7</sub>(H<sub>2</sub>O)]<sup>c</sup> Ama2

### **CHAIN**

**BORAX** {g}[ $B_2^{t}B_2^{t}O_5(OH)_4]\{1\infty\}[Na_2^{\circ}(H_2O)_8]$  C2/c **COLEMANITE**  $Ca^{[7]}(H_2O)\{1\infty\}[B^{t}B_2^{t}O_4(OH)_3]^{my}$  P2,/a

### SHEET

 $\begin{array}{lll} \textbf{HALLOYSITE - 10 \ \mathring{\textbf{A}} \ } & (\text{H}_2\text{O})_2\{2\infty\}[\text{Al}_2^{\circ}(\text{OH})_4\{2\infty\}[\text{Si}_2^{\,t}\text{O}_5]^{\circ}] \\ \textbf{Mon.s.g.?} \\ \textbf{PALYGORSKITE} \ & (\text{Mg},\text{Al})_2^{\,\circ}(\text{H}_2\text{O})_4(\text{OH})\{2\infty\}[\text{Si}_4^{\,t}\text{O}_{10}] \\ \textbf{C2/m} \\ \textbf{SEPIOLITE} \ & \text{Mg}_4^{\,\circ}(\text{H}_2\text{O})_6(\text{OH})_2\{2\infty\}[\text{Si}_6^{\,t}\text{O}_{15}] \ & \text{Pncn} \\ & (\approx \text{Palygorskite}) \\ \end{array}$ 

### **FRAMEWORK**

**ANALCIME (cubic)** Na(H<sub>2</sub>O){ $3\infty$ }[Si<sub>2</sub><sup>t</sup>Al<sup>t</sup>O<sub>6</sub>] I a3d **CHABAZITE** (Ca, $\square_5$ )(H<sub>2</sub>O)<sub>6</sub>{ $3\infty$ }[Al<sub>2</sub><sup>t</sup>Si<sub>4</sub><sup>t</sup>O<sub>12</sub>] R  $\overline{3}$ m (Zeolite) **GISMONDINE** Ca<sub>2</sub>°(H<sub>2</sub>O)<sub>9</sub>{ $3\infty$ }[Al<sub>4</sub><sup>t</sup>Si<sub>4</sub><sup>t</sup>O<sub>16</sub>] P2<sub>1</sub>/c **HEULANDITE** (Na,K,Ca,Sr,Ba)<sub>5</sub><sup>(6)</sup>(H<sub>2</sub>O)<sub>26</sub> { $3\infty$ }[Al<sub>9</sub><sup>t</sup>Si<sub>2</sub>r<sup>t</sup>O<sub>72</sub>] Cm (Zeolite) **NATROLITE** Na<sub>2</sub>°(H<sub>2</sub>O)<sub>2</sub>{ $3\infty$ }[Si<sub>3</sub><sup>t</sup>Al<sub>2</sub><sup>t</sup>O<sub>10</sub>] Fdd2 (Zeolite) **SCOLECITE** Ca<sup>[7]</sup>(H<sub>2</sub>O)<sub>3</sub>{ $3\infty$ }[Si<sub>3</sub><sup>t</sup>Al<sub>2</sub><sup>t</sup>O<sub>10</sub>] Cc

ACUMINITE {3\infty}[Sr^{[9]}Al^9F\_4(OH)(H2O)] C2/c

Deriv. ANALCIME(monoclinic)Na( $H_2O$ ){ $3\infty$ }[Si<sub>2</sub><sup>t</sup>Al<sup>t</sup>O<sub>6</sub>]C2/c ( $\approx$ Sodalite)

**BREWSTERITE**  $(Sr,Ba,Ca)^{[9]}(H_2O)_5{3\infty}[Al_2^tSi_6^tO_{16}] P2_1/m$ 

Pop.: ENDELLITE  $(H_2O)_2[2\infty][Al_2^{\circ}(OH)_4][2\infty][Si_2^{\dagger}O_5]^{\circ}$ 

### MINERALS TENTATIVELY CLASSIFIED

(Zeolite)

(≈Tikhonenkovite) **AFGHANITE**  $(Na,Ca,K)_8^{[8]}(Cl,SO_4)_3(H_2O)_n\{3\infty\}[(Si,Al)_{12}^{t}O_{24}]$ P6₃mc... (≈Cancrinite,Zeolite) **AFWILLITE** {2\infty}[Ca2<sup>[7]</sup>Ca<sup>[6]</sup>Si2<sup>t</sup>O6(OH)2(H2O)2] Cc (≈Bultfonteinite) **AKROCHORDITE** (Mn,Mg)<sub>5</sub>°As<sub>2</sub><sup>t</sup>[O<sub>8</sub>(OH)<sub>4</sub>(H<sub>2</sub>O)<sub>4</sub>] P2<sub>1</sub>/c **AKSAITE**  $Mg^{\circ}(H_2O)_2\{g\}[(B_2^{\ t}B^{tr})_2O_7(OH)_6]$  Pbca (≈Volkovskite) **ALUMINITE** (H<sub>2</sub>O)<sub>4</sub>[Al<sub>2</sub>°(OH)<sub>4</sub>(H<sub>2</sub>O)<sub>3</sub>{g}[S<sup>t</sup>O<sub>4</sub>]] P2<sub>1</sub>/c AMARANTITE  $(H_2O)_6\{1\infty\}[Fe_4^\circ S_4^\bullet O_{18}(H_2O)_8] P \overline{1}$ ANAPAITE  $3\infty[Ca_2^{[7by]}Fe^\circ P_2^\bullet O_8(H_2O)_4] P \overline{1}$ APJOHNITE Mn°Al2°S4<sup>t</sup>[O<sub>16</sub>(H<sub>2</sub>O)<sub>22</sub>] P2<sub>1</sub>/c (=Halotrichite) ARMSTRONGITE  $Ca^{\circ}Z_{1}^{\circ}(H_{2}O)_{25}[2\infty][Si_{6}^{\circ}O_{16}]$  C2/m... ARSENBRACKEBUSCHITE  $Pb_{2}^{[6/11]}(Fe,Zn)^{\circ}As_{2}^{\dagger}[O_{6}(H_{2}O)]$ P2/m (≈Brackebuschite) ARTINITE  $Mg_2^{\circ}\{g\}[C^{Ir}O_3](OH)_2(H_2O)_3$  C2/m BASALUMINITE  $AI_4^{\circ}S^{\circ}[O_4(OH)_{10}(H_2O)_4]$  Mon. s.g.? BAYLISSITE  $K^{[5+3]}Mg^{\circ}(H_2O)_4[g][C^{Ir}O_3]_2$  P2<sub>1</sub>/n **BERBORITE**  $\{3\infty\}[Be_2^{\dagger}B^{\dagger}O_3(OH,F)(H_2O)]$  P3 **BERMANITE**  $Mn_3^{\circ}P_2^{\dagger}[O_8(OH)_2(H_2O)_4]^{\circ}$  P2<sub>1</sub> BIKITAITE (triclinic) 300[LitAltSi2tO6(H2O)] Tric. P1 BIKITAITE (monoclinic) 3\(\infty\)[Li^tAl^tSi\_2^tO\_6(H\_2O)] P21 **BIRNESSITE**  $(Mg,Mn)^{\circ}Mn_6^{\circ}[O_{14}(Na,Ca,K)(H_2O)_5]$  (Hex.)C2/m (≈Chalcophanite)

**BLÖDITE**  $Na_2^{\circ}\{g\}[Mg^{\circ}S_2^{\dagger}O_8(H_2O)_4]$   $P2_1/a$ 

BRASSITE Mg°As<sup>t</sup>[O<sub>3</sub>(OH)(H<sub>2</sub>O)<sub>4</sub>] Pbca

(Zeolite)

(=Kröhnkite)

**BOGGSITE** Na<sub>3</sub>Ca<sub>8</sub>(H<sub>2</sub>O)<sub>70</sub>( $3\infty$ )[(Si,Al)<sub>96</sub><sup>t</sup>O<sub>192</sub>] I mma

BRANDTITE Ca<sub>2</sub>[7] {1∞}[(Mn,Mg)°As<sub>2</sub><sup>t</sup>O<sub>8</sub>(H<sub>2</sub>O)<sub>2</sub>] P2<sub>1</sub>/c

BRUSHITE Ca<sup>[6+2]</sup>P<sup>t</sup>[O<sub>3</sub>(OH)(H<sub>2</sub>O)<sub>2</sub>] I 2/a (≈Gypsum) **BUDDINGTONITE** (NH<sub>4</sub>)(H<sub>2</sub>O)<sub>0.5</sub>{ $3\infty$ }[Si<sub>3</sub><sup>t</sup>Al<sup>t</sup>O<sub>8</sub>] P2<sub>1...</sub> (≈Sanidine) BUTLERITE Fe°S<sup>t</sup>[O<sub>4</sub>(OH)(H<sub>2</sub>O)<sub>2</sub>] P2<sub>1</sub>/m CALCIUM CATAPLEIITE Ca<sup>[6]</sup>(H<sub>2</sub>O){3∞}[Zr<sup>0</sup>Si<sub>3</sub><sup>t</sup>O<sub>9</sub>] P6₃/mmc (≈Catapleiite) **CARLOSTURANITE** (Mg,Fe,Ti)<sub>21</sub><sup>0</sup>(Si,Al)<sub>12</sub><sup>t</sup>[O<sub>28</sub>(OH)<sub>34</sub>(H<sub>2</sub>O)] Cm **CARRBOYDITE**  $(Ni,Al)_8^o S_{1.6}^t [O_{6.4}(OH)_{16}(H_2O)_{8.5}]^n$  Hex.s.g.? CATAPLEIITE Na<sub>2</sub><sup>[6]</sup>(H<sub>2</sub>O)<sub>2</sub>{3∞}[Zr<sup>o</sup>Si<sub>3</sub><sup>t</sup>O<sub>9</sub>] B2/b  $\begin{array}{lll} \textbf{CHALCONATRONITE} & \textbf{Na}_{2}^{0} (\textbf{H}_{2} \textbf{O})_{3} \textbf{Cu}^{[59]} \{^{0}_{3}\} \textbf{C}^{tt} \textbf{O}_{3}]_{2} & \textbf{P2}_{1} / n \\ \textbf{CLINOPTILOLITE} & (\textbf{Na}, \textbf{K})_{6}^{[6]} (\textbf{H}_{2} \textbf{O})_{20} \{^{3}_{20}\} [\textbf{A}|_{6}^{1} \textbf{S}|_{30}^{1} \textbf{O}_{72}] & \textbf{C2} / m \\ \end{array}$ (≈Heulandite,Zeolite) **COPIAPITE**  $(H_2O)_6\{1\infty\}[Fe_2^\circS_3^tO_{12}(OH)(H_2O)_4]_2$ {g}[Fe°(H<sub>2</sub>O)<sub>6</sub>] P 1 CORRENSITE  $\label{eq:main_equation} (\text{Mg,Fe,Al})_9^o(\text{OH})_{10}(\text{H}_2\text{O})_n\{2\infty\}[(\text{Si,Al})_4^{\ t}\text{O}_{10}]_2^{(2.s)c} \quad \text{Orth. s.g.?}$ («Vermiculite-Chlorite) COWLESITE Ca(H<sub>2</sub>O)<sub>5-6</sub>{3∞}[Al<sub>2</sub><sup>t</sup>Si<sub>3</sub><sup>t</sup>O<sub>10</sub>] P222<sub>1</sub> (≈Thomsonite,Zeolite) EDINGTONITE (tetragonal) Ba(H<sub>2</sub>O)<sub>3.5</sub>(3\omega)[Al<sub>2</sub><sup>t</sup>Si<sub>3</sub><sup>t</sup>O<sub>10</sub>] P 42₁m (≈Natrolite,Zeolite) EDINGTONITE (orthorhombic) Ba(H<sub>2</sub>O)<sub>4</sub>(3\infty)[Al<sub>2</sub><sup>t</sup>Si<sub>3</sub><sup>t</sup>O<sub>10</sub>] P2₁2₁2 (≈Natrolite,Zeolite) **EUCHROITE** Cu<sub>2</sub>°As<sup>t</sup>[O<sub>4</sub>(OH)(H<sub>2</sub>O)<sub>3</sub>] P2<sub>1</sub>2<sub>1</sub>2<sub>1</sub> EUDIDYMITE  $Na_2^{[7]}(H_2O)\{3\omega\}[Be_2^{i}Si_6^{i}O_{15}]$  C2/c EZCURRITE  $Na_2^{[6/7]}(H_2O)_2\{1\omega\}[B_5^{i}O_7(OH)_3]$  P 1 FAIRFIELDITE  $Ca_2^{[7]}\{1\infty\}[(Mn,Fe)^{\circ}P_2^{t}O_8(H_2O)_2] P \overline{1}$ (≈Kröhnkite)

Table 68S

### $A_pB_qC_rD_s.nAq.(cont.)$

### MINERALS TENTATIVELY CLASSIFIED (cont.)

 $\textbf{FALCONDITE} \hspace{0.2cm} \textbf{(Ni,Mg)_4}^O \textbf{(H}_2O)_6 \textbf{(OH)_2} \textbf{\{2\infty\}} \textbf{[Si_6}^tO_{15]} \hspace{0.2cm} \textbf{Pncn}$ MENDOZITE Na°Al°S<sub>2</sub><sup>t</sup>[O<sub>8</sub>(H<sub>2</sub>O)<sub>11</sub>] C2/c (≈Tamarugite) (=Sepiolite,≈Palygorskite) METAVIVIANITE Fe<sub>3</sub>°P<sub>2</sub><sup>t</sup>[O<sub>8</sub>(H<sub>2</sub>O)<sub>6</sub>(OH<sub>x</sub>.] P 1 FERRINATRITE {3\infty}[Na<sub>3</sub>[7]Fe<sup>0</sup>S<sub>3</sub>tO<sub>12</sub>(H<sub>2</sub>O)<sub>3</sub>] P 3 (Subs.d.Symplesite) FIBROFERRITE Fe°S¹[O<sub>4</sub>(OH)(H<sub>2</sub>O)<sub>5</sub>] R 3 MEYERHOFFERITE Ca<sup>o</sup>(H<sub>2</sub>O){g}[B<sub>2</sub><sup>t</sup>B<sup>tr</sup>O<sub>3</sub>(OH)<sub>5</sub>] P 1 GAIDONNAYITE Na<sub>2</sub>°Zr°(H<sub>2</sub>O)<sub>2</sub>{1∞}[Si<sub>3</sub><sup>t</sup>O<sub>9</sub>] P2<sub>1</sub>nb (≈Inderite) MINASRAGRITE V°S<sup>t</sup>[O<sub>5</sub>(H<sub>2</sub>O)<sub>5</sub>] P2<sub>1</sub>/c (Georgechaoite) GAYLUSSITE Ca[8]Na2[6](H2O)5{g}[CtO3]2 C2/c MOOREITE  $(Mg,Zn)_{11}^{0}$ Zn<sub>4</sub>S<sub>2</sub> $^{1}$ O<sub>8</sub> $(OH)_{26}(H_{2}O)_{8}$  $P2_{1}/a$  MOSESITE  $(H_{2}O)$ Cl  $3∞[N^{t}Hg_{2}^{(2]eos}]$   $^{\circ}$  F  $\overline{4}$ 3m (≈β-Cristobalite)  $\begin{array}{lll} \textbf{GMELINITE} & \textbf{Na}_4(\textbf{H}_2\textbf{O})_{11}(3\infty)[\textbf{A}]_4 \ \textbf{S}]_6 \ \textbf{O}_{24}] & \textbf{P6}_3 / \text{mmc} \ (\textbf{Zeolite}) \\ \textbf{GOLDICHITE} & \textbf{K}^{10/11}[2\infty][\textbf{Fe}^\circ\textbf{S}_2^\dagger\textbf{O}_6(\textbf{H}_2\textbf{O})_4] & \textbf{P2}_1/c \\ \end{array}$ **NAMUWITE**  $(Z_{n_1},Cu)_3^{\circ}Z_n^{\dagger}S^{\dagger}[O_4(OH)_6(H_2O)_4] P \bar{3}$ GOOSECREEKITE  $Ca^{(6)}(H_2O)_5(3\infty)[Al_2{}^tSi_6{}^tO_{16}]$  P2<sub>1</sub> (Zeolite) NASINITE Na<sub>2</sub><sup>[8]</sup>(H<sub>2</sub>O)<sub>2</sub>{g}[B<sub>2</sub><sup>t</sup>B<sub>3</sub><sup>tr</sup>O<sub>8</sub>(OH)] Pna2<sub>1</sub> NATROPHOSPHATE Na7°P2<sup>t</sup>[O8(F,OH)(H2O)19] Fd3c GÖRGEYITE K<sub>2</sub><sup>[8]</sup>[Ca<sub>3</sub><sup>[9]</sup>Ca<sub>2</sub><sup>[8]</sup>S<sub>6</sub><sup>†</sup>O<sub>24</sub>(H<sub>2</sub>O)] B2/b HAIDINGERITE CaºAst[O3(OH)(H2O)] Pcnb NEWBERYITE Mg°P<sup>t</sup>[O<sub>3</sub>OH(H<sub>2</sub>O)<sub>3</sub>] Pbca HALOTRICHITE Fe<sup>o</sup>Al<sub>2</sub><sup>o</sup>S<sub>4</sub><sup>t</sup>[O<sub>16</sub>(H<sub>2</sub>O)<sub>22</sub>] P2/m (=Apjohnite) NICKELBLÖDITE Na<sub>2</sub>°{g}{(Ni,Mg)°S<sub>2</sub><sup>t</sup>O<sub>8</sub>(H<sub>2</sub>O)<sub>4</sub>] P2<sub>1</sub>/a **HEMIMORPHITE**  $(H_2O){3\infty}[Si_2^tZn_4^tO_7(OH)_2]$  I mm2 (≈Blödite) NOBLEITE  $Ca^{[10]}(H_2O)_3\{2\infty\}[B_3{}^{tr}(OH)_2]$  P2<sub>1</sub>/a (=Tunellite) HILAIRITE Na<sub>2</sub>(H<sub>2</sub>O)<sub>3</sub>{1 $\infty$ }[Zr<sup>o</sup>Si<sub>3</sub><sup>t</sup>O<sub>9</sub>] R32 HILGARDITE - 1Tc Ca<sub>2</sub><sup>[8/7]</sup>(H<sub>2</sub>O)Cl{3 $\infty$ }[B<sub>3</sub><sup>t</sup>B<sub>2</sub><sup>tr</sup>O<sub>9</sub>] P1 PACHNOLITE Na<sup>[12]</sup> [2∞][ Al<sup>2</sup>(q)[Ca<sup>[8]</sup>F<sub>6</sub>(H<sub>2</sub>O)] ] F2/d
PARABARIOMICROLITE Ba<sup>25</sup>□<sub>3</sub> Ta<sub>4</sub> [O<sub>10</sub>(H<sub>2</sub>O)<sub>2</sub>(OH)<sub>2</sub>□<sub>2</sub>] E (≈Tyretskite) R 3m (Dist.defect.deriv.Pyrochlore)
PARABRANDTITE Ca<sub>2</sub><sup>[8]</sup>Mn°As<sub>2</sub><sup>1</sup>[O<sub>8</sub>(H<sub>2</sub>O)<sub>2</sub>] P1... HILGARDITE - 3Tc Ca<sub>2</sub>[Bby](H<sub>2</sub>O)Cl(3w)[B<sub>3</sub>tB<sub>2</sub>trO<sub>9</sub>] P1 (≈Tyretskite) HILGARDITE - 4M Ca2[8by](H2O)CI(300)[B3tB2trO9] Aa (=Talmessite) PARABUTLERITE Fe°S¹[O<sub>4</sub>(OH)(H<sub>2</sub>O)<sub>2</sub>] Pmnb PENTAHYDROBORITE Ca<sup>[7]</sup>(H<sub>2</sub>O)<sub>2</sub>(g){B<sub>2</sub>¹O(OH)<sub>6</sub>] P 1 (≈Zeolite) **HOHMANNITE**  $(H_2O)_4\{1\infty\}[Fe_2{}^{o}S_2{}^{t}O_9(H_2O)_4]$  P 1 PHARMACOLITE {2∞}[Ca<sup>[8]</sup>As<sup>t</sup>O<sub>4</sub>(H<sub>2</sub>O)<sub>2</sub>] I a (≈Gypsum) (≈Amarantite) PHILIPSBURGITE  $(Cu,Zn)_6^o(As,P)_2^t[O_8(OH)_6(H_2O)]$  P2<sub>1</sub>/c **HONESSITE**  $(H_2O)_n[2\infty[(Ni,Fe)_8^{\circ}(OH)_{16}[g][S^tO_4]]$  Trig. s.g.? (=Veszelyite) (≈Reevesite) PHOSPHOPHYLLITE Zn<sup>[6]</sup>Zn<sup>†</sup>P<sub>2</sub><sup>†</sup>[O<sub>8</sub>(H<sub>2</sub>O)<sub>4</sub>] P2<sub>1</sub>/c (≈Hopeite) **HUNGCHAOITE**  $(H_2O)_2\{3\infty\}[Mg^0(H_2O)_5B_4{}^tO_5(OH)_4] P \bar{1}$ PHOSPHORRÖSSLERITE Mg°Pt[O3(OH)(H2O)7] C2/c **HYDROMAGNESITE**  $\{3\infty\}[Mg_5^{\circ}(OH)_2(H_2O)_4\{g\}[C^{tr}O_3]_4]$ (≈Rösslerite) P2<sub>1</sub>/ c PICROMERITE K2[7]Mg°S2[O8(H2O)6] P21/a **INDERITE**  $(H_2O)_5\{g\}[Mg^0B_2^tB^tO_3(OH)_5]$  P2<sub>1</sub>/a( $\approx$ Kumakovite) (=Boussingaultite) INYOITE Ca[8](H2O)4{g}[B2 BtO3(OH)5] P21/a **PIMELITE**  $Ni_3^0(H_2O)(OH)_2\{2\infty\}[Si_4^{t}O_{10}]^{(2h)c}$  S.? (\*Talc) JULIËNITE Na2[8](H2O)8C0t(g)[SCN]4 P21/n PIRSSONITE {2\infty}[Na2[6]Ca[8](H2O)2{9}[CtO3]2] Fdd2 **JURBANITE**  $(H_2O)_2[\{g\}[Al_2^o(OH)_2(H_2O)_8]\{g\}[S^tO_4]_2]$  P2<sub>1</sub>/n PLANCHÉITE Cu<sub>8</sub>[6/4](OH)<sub>4</sub>(H<sub>2</sub>O){1∞}[Si<sub>8</sub><sup>t</sup>O<sub>22</sub>]<sup>2</sup> (≈Shattuckite,≈Tremolite) KERNITE Na<sub>2</sub><sup>[5]</sup>(H<sub>2</sub>O)<sub>3</sub>{1∞}[B<sub>2</sub><sup>t</sup>B<sub>2</sub><sup>tr</sup>O<sub>6</sub>(OH)<sub>2</sub>] P2<sub>1</sub>/c POLLUCITE (Cs,Na)(H<sub>2</sub>O)<sub>n</sub>(3∞)[Si<sub>2</sub><sup>t</sup>Al<sup>t</sup>O<sub>6</sub>] I a3d (Zeolite) **KEROLITE**  $Mg_3^{\circ}(OH)_2\{2\infty\}[Si_4^{\circ}O_{10}]$  S.? ( $\approx$ Pimelite, $\approx$ Talc) POSNJAKITE {2\infty}[Cu4\inftyStO4(OH)6H2O)] Pa KINOITE {3\infty}{Ca2\(^{0}(H\_2O)\_2Cu2^{[5y]}\) {g}{Si3\(^{1}O\_{10}\)] P2<sub>1</sub>/m... POTASSIUM ALUM K°Al°S<sub>2</sub> [O<sub>8</sub>(H<sub>2</sub>O)<sub>12</sub>] Pa3 PROSPERITE {3∞}[Ca<sup>[9]</sup>Zn<sub>2</sub><sup>[5]</sup>AS<sub>2</sub> O<sub>8</sub>(H<sub>2</sub>O)] C2/c (≈Shattuckite) KIPUSHITE (Cu,Zn)6°P2'[O8(OH)6(H2O)] P21/c (=Veszelyite) KOVDORSKITE M92°P'[O4(OH)(H2O)3] P21/a RANSOMITE Cu°Fe2°S4<sup>t</sup>[O₁6(H2O)6] P2₁/a (≈Römerite) **REDINGTONITE** (Fe,Mg,Ni)<sup>o</sup>(Cr,Al)<sub>2</sub><sup>o</sup>S<sub>4</sub><sup>t</sup>[O<sub>16</sub>(H<sub>2</sub>O)<sub>22</sub>] (Mon.)P2 KRAUSITE K[10][10][Fe°S2\*O8(H2O)] P21/m (≈Halotrichite) KRAUTITE Mn°As<sup>t</sup>[O<sub>3</sub>(OH)(H<sub>2</sub>O)] P2₁/n (≈Haidingerite) RIVERSIDEITE Ca<sub>10</sub>(OH)<sub>4</sub>{2\omega}[Si<sub>12</sub><sup>t</sup>O<sub>31</sub>(H<sub>2</sub>O)<sub>4</sub>] C222<sub>1</sub> **KRÖHNKITE** Na<sub>2</sub><sup>[7]</sup> $\{1\infty\}[Cu^{o}S_{2}^{t}O_{8}(H_{2}O)_{2}]$  P2<sub>1</sub>/c (=Brandtite). (≈Tobermorite) KTENASITE 200[(Cu,Zn)4°S2<sup>t</sup>O8(OH)6]{g}[Zn°(H2O)6] P21/C ROSELITE Ca<sub>2</sub><sup>[7]</sup>{1∞}[(Co,Mg)<sup>o</sup>As<sub>2</sub><sup>t</sup>O<sub>8</sub>(H<sub>2</sub>O)<sub>2</sub>] P2<sub>1</sub>/c **KURNAKOVITE**  $3\infty[Mg^{0}(OH)_{5}\{g\}[B_{2}^{\dagger}B^{\dagger r}O_{3}(H_{2}O)_{5}]]$  P  $\bar{1}$ (=Brandtite) (≈Inderite) RÖSSLERITE Mg°Ast[O3OH(H2O)7] C2/c LANGITE Cu<sub>4</sub>°S<sup>t</sup>[O<sub>4</sub>(OH)<sub>6</sub>(H<sub>2</sub>O)<sub>2</sub>] Pc (≈Wroewolfeite) SCARBROITE Al<sub>5</sub>°C<sup>tr</sup>[O<sub>3</sub>(OH)<sub>13</sub>(H<sub>2</sub>O)<sub>5</sub>]<sup>h</sup> Tric. s.g.? SCHOLZITE Ca°Zn<sub>2</sub>P<sub>2</sub>[O<sub>8</sub>(H<sub>2</sub>O)<sub>2</sub>] Pbc2<sub>1</sub> SENEGALITE Al<sup>6</sup>Al<sup>15by</sup>P<sup>t</sup>[O<sub>4</sub>(OH)<sub>3</sub>(H<sub>2</sub>O)] P2<sub>1</sub>nb **LARDERELLITE**  $NH_4(H_2O)\{1\infty\}[B_5O_7(OH)_2]$   $P2_1/c$ LAUMONTITE  $Ca^{p}(H_{2}O)_{4}[3\infty][Al_{2}^{t}Si_{4}^{t}O_{12}]$  C2/m (≈Mordenite,Zeolite) **SHERWOODITE**  $Ca_{4.5}(H_2O)_{28}\{3\infty\}[Al^{\circ}V_{14}{^{\circ}O_{40}}]$  | 4<sub>1</sub>amd LECONTITE Na<sup>o</sup>S<sup>t</sup>[O<sub>4</sub>(H<sub>2</sub>O)<sub>2</sub>(NH<sub>4</sub>,K)] P2<sub>1</sub>2<sub>1</sub>2<sub>1</sub> (≈Mirabilite) **SODDYITE**  $(H_2O)_2\{1\infty\}[(UO_2)_2SiO_4]$  Foldd  $\begin{array}{ll} \textbf{LEGRANDITE} & Zn_2^0 As^t [O_4(OH)(H_2O)] & P2_1/c \ (\approx Spencerite) \\ \textbf{LEONITE} & \ 3\infty [K^{[9]}K^{[10]}Mg^{[6]}S^t_2O_8(H_2O)_4] & C2/m \end{array}$ SODIUM ALUM NaºAlºS2 [O8(H2O)12] Pa3 **SPENCERITE** Zn<sub>2</sub>°Zn<sub>2</sub>'P<sub>2</sub>'[O<sub>8</sub>(OH)<sub>2</sub>(H<sub>2</sub>O)<sub>3</sub>] P2/c LÖWEITE Na<sub>12</sub><sup>[7]</sup>(H<sub>2</sub>O)<sub>3</sub>(g)[S<sup>t</sup>O<sub>4</sub>]<sub>4</sub>(3\omega)[Mg<sub>7</sub>°S<sub>9</sub><sup>t</sup>O<sub>36</sub>(H<sub>2</sub>O)<sub>12</sub>]
MAKATITE Na°Na|<sup>55y</sup>/(H<sub>2</sub>O)<sub>4</sub>(2\omega)[Si<sub>2</sub>O<sub>4</sub>(OH)]<sub>2</sub>P2<sub>1</sub>/c STELLERITE  $Ca^{[6]}(H_2O)_7\{3\infty\}[Si_7^tAl_2^tO_{18}]$  Fmmm (≈Stilbite,Zeolite) MANNARDITE Ti<sub>6</sub>°(Cr)<sub>2</sub>°[Ba(H<sub>2</sub>O)O<sub>16</sub>]<sup>chh</sup> I 4₁/a(≈Hollandite) STOKESITE  $Ca^{[8]}Sn^{[6]}(H_2O)_2\{1\infty\}[Si_3^{\dagger}O_9]$  Pnna **MARICOPAITE**  $Ca_2Pb_7(H_2O)_{32}\{3\infty\}[(Si,AI)_{48}^tO_{100}]$ STRASHIMIRITE Cu4°AS2<sup>t</sup>[O8(OH)2(H2O)2,5] P2/m... Cmmm..(«Mordenite, Zeolite). STRINGHAMITE Ca[7]H2O{20}[Cusq {g}[SitO4] ] P21/C MATTEUCCITE Na<sup>o</sup>S<sup>t</sup>[O₄H(H₂O)] Aa (≈Mirabilite) STRUVITE Mg°P¹(NH4)[O4(H2O)6] Pmn21 MCALLISTERITE Mg2°B12<sup>t</sup>[O14(OH)12(H2O)9] R 3c **TALMESSITE**  $Ca_2^{[8]}Mg^{\circ}As_2^{t}[O_8(H_2O)_2] P \bar{1}$  (=Parabrandtite)

Table 69S

### A<sub>p</sub>B<sub>q</sub>C<sub>r</sub>D<sub>s</sub>.nAq.(cont.)

### **MINERALS TENTATIVELY CLASSIFIED (cont.)**

TAMARUGITE Na°Al°S₂¹[O<sub>8</sub>(H<sub>2</sub>O)<sub>6</sub>] P2₁/a THOMSENOLITE Na¹¹²[⟨3∞⟩[Ca¹³]Al°(H<sub>2</sub>O)F<sub>6</sub>] P2₁/c TIKHONENKOVITE Sr¹³]Al°[F₄(OH)(H<sub>2</sub>O)] P2₁/c TIKHONENKOVITE Sr¹³]Al°[F₄(OH)(H<sub>2</sub>O)] P2₁/c TINCALCONITE {g}[B₂¹B₂¹¹O₅(OH)₄[⟨3∞}[Na°₂(H<sub>2</sub>O)₃] R32 TRUSCOTITE (Ca,Mn)₁₄¹³[Si₂₄¹[O₅<sub>8</sub>(OH)₃(H<sub>2</sub>O)₂] P  $\bar{3}$  TSCHERMIGITE Al°S₂¹O₅(H<sub>2</sub>O)₁²(g)[NH₄]¹⁵] Pa3 TSUMCORITE Pb¹³(Zn,Fe)₂°As₂¹[O₅(OH,H<sub>2</sub>O)₂] C2/m (≈Brackebuschite) TUNELLITE Sr¹¹¹O[(H<sub>2</sub>O)₃{2∞}[B₃¹B₃¹¹O₃(OH)₂] P2₁/a (=Nobleite) UMOHOITE Ul⁶]Mo¹⁶][O₅(H<sub>2</sub>O)₄] P2₁/m... VESZELYITE (Cu,Zn)₃°P¹[O₄(OH)₃(H<sub>2</sub>O)₂]P2₁/a(=Kipushite) VINOGRADOVITE 3∞[(Na,Ca)₄¹ð¹Ti₄°Si₅¹O₂₅(H<sub>2</sub>O,K₃)] C2/c (≈Rinkite)

 $\begin{array}{lll} \textbf{VOLBORTHITE} & \textbf{Cu}_3^{\circ} V_2^{t} [O_7(O\text{H})_2(\text{H}_2\text{O})_2] & \textbf{C2}... \\ \textbf{WAIRAKITE} & \textbf{Ca}^{[6]}(\text{H}_2\text{O})_2 \{ 3\infty \} [\text{AI}_2^{t} \text{Si}_4^{t} \text{O}_{12}] \ \textbf{I} \ 2/a \\ (\approx & \textbf{Analcime}, \textbf{Zeolite}) & \textbf{WAVELLITE} & \textbf{AI}_3^{\circ} P_2^{t} [O_8(O\text{H}, \textbf{F})_3(\text{H}_2\text{O})_5] & \textbf{Pcmn}... \\ \textbf{WENDWILSONITE} & \textbf{Ca}^{[7]} \{ 1\infty \} [(\text{Mg}, \text{CO})^{\circ} \text{As}_2^{t} \text{O}_8(\text{H}_2\text{O})_2] & \textbf{P2}_1/c \\ (= & \textbf{Brandtite}) & \textbf{WHITMOREITE} & \textbf{Fe}_3^{\circ} P_2^{t} [O_8(O\text{H})_2(\text{H}_2\text{O})_4]^{orh} & \textbf{P2}_1/c & \textbf{(Basic str. Arthurite)} \\ \textbf{WROEWOLFEITE} & \textbf{Cu}_4^{\circ} \text{S}^{t} [O_4(O\text{H})_6(\text{H}_2\text{O})_2] & \textbf{Pc} \\ \textbf{YOFORTIERITE} & (\textbf{Mn}, \textbf{Mg})_5^{\circ} (\text{H}_2\text{O})_8, \textbf{g}(\text{OH})_2 \{ 2\infty \} [\textbf{Si}_8^{t} \text{O}_{20}] & \textbf{Pn} \\ (\approx & \textbf{Palygorskite}) & \textbf{YUGAWARALITE} & \textbf{Ca}^{[8]} (\text{H}_2\text{O})_4 \{ 3\infty \} [\textbf{Si}_6^{t} \text{Al}_2^{t} \text{O}_{16}] & \textbf{Pc} & \textbf{(Zeolite)} \\ \textbf{ZEMANNITE} & (\textbf{H}, \textbf{Na})_2 (\textbf{H}_2\text{O})_n \{ 3\infty \} [(\textbf{Zn}, \textbf{Fe})_2^{\circ} \textbf{Te}_3^{(4y)} \text{O}_9] & \textbf{P6}_3/m \\ (\approx & \textbf{Zeolite}) & \textbf{Zeolite} \\ \end{array}$ 

### **MINERALS NOT YET CLASSIFIED**

AGRINIERITE (K2,Ca,Sr)(UO2)3O4.4H2O Cmmm AMARILLITE NaFe(SO<sub>4</sub>)<sub>2</sub>.6H<sub>2</sub>O P2/m? **AMMONIOBORITE** (NH<sub>4</sub>)<sub>3</sub>B<sub>15</sub>O<sub>20</sub>(OH)<sub>8</sub>.4H<sub>2</sub>O C2/c ARHBARITE Cu<sub>2</sub>(AsO<sub>4</sub>(OH).6H<sub>2</sub>O Mon. s.g.? ASBOLANE Mn(O,OH)<sub>2</sub>(Co,Ni,Ca)<sub>x</sub>(OH)<sub>2x</sub>.nH<sub>2</sub>O Hex. s.g.? BEARSITE Be2AsO4(OH).4H2O C2/c BETA-ROSELITE Ca<sub>2</sub>(Co,Mg)(AsO<sub>4</sub>)<sub>2</sub>,2H<sub>2</sub>O P 1 ●BIRINGUCCITE Na<sub>2</sub>B<sub>5</sub>O<sub>8</sub>(OH).H<sub>2</sub>O P2<sub>1</sub>/c BOLIVARITE Al<sub>2</sub>PO<sub>4</sub>(OH)<sub>3</sub>.4-5H<sub>2</sub>O Amorph. BOSTWICKITE CaMn<sub>6</sub>Si<sub>3</sub>O<sub>16</sub>.7H<sub>2</sub>O S.? ●BOUSSINGAULTITE (NH<sub>4</sub>)<sub>2</sub>Mg(SO<sub>4</sub>)<sub>2</sub>.6H<sub>2</sub>O P2<sub>1</sub>/a ●BRACKEBUSCHITE Pb<sub>2</sub>(Mn,Fe)(VO<sub>4</sub>)<sub>2</sub>.H<sub>2</sub>O P2<sub>1</sub>/m... **BRAITSCHITE - (Ce)** (Ca,Na<sub>2</sub>)<sub>7</sub>(Ce,La)<sub>2</sub>B<sub>22</sub>O<sub>43</sub>.7H<sub>2</sub>O Hex. BULACHITE Al<sub>2</sub>AsO<sub>4</sub>(OH)<sub>3</sub>.3H<sub>2</sub>O Pmnm... CAFARSITE (Ca,Mn)<sub>8</sub>(Ti,Fe)<sub>6.5</sub>(AsO<sub>3</sub>)<sub>12</sub>.2H<sub>2</sub>O Pn3 CAFETITE (Ca,Mg)(Fe,AI)<sub>2</sub>Ti<sub>4</sub>O<sub>12</sub>.4H<sub>2</sub>O Ammm CALCIOHILAIRITE CaZrSi<sub>3</sub>O<sub>9</sub>.3H<sub>2</sub>O R32 ●CANAPHITE Na<sub>2</sub>CaP<sub>2</sub>O<sub>7</sub>.4H<sub>2</sub>O Pc CASSIDYITE Ca<sub>2</sub>(Ni,Mg)(PO<sub>4</sub>)<sub>2</sub>.2H<sub>2</sub>O P 1... CESBRONITE Cu<sub>5</sub>(TeO<sub>3</sub>)<sub>2</sub>(OH)<sub>6</sub>.2H<sub>2</sub>O Pbcn CHLORMAGALUMINITE (Mg,Fe)<sub>4</sub>Al<sub>2</sub>(OH)<sub>12</sub>Cl<sub>2</sub>.2H<sub>2</sub>O P6/mcm... CHOLOALITE CuPb(TeO3)2.H2O P23... CLARAITE (Cu,Zn)<sub>3</sub>CO<sub>3</sub>(OH)<sub>4</sub>.4H<sub>2</sub>O Hex. s.g.? COBALTKORITNIGITE (Co,Zn)(AsO3OH).H2O P 1? COLLINSITE Ca<sub>2</sub>(Mg,Fe)(PO<sub>4</sub>)<sub>2</sub>.2H<sub>2</sub>O P 1 COMPREIGNACITE K2(UO2)6(OH)14.4H2O Pnmn... CYANOCHROITE K2Cu(SO4)2.6H2O P21/a ●DEFERNITE Ca<sub>3</sub>CO<sub>3</sub>(OH,Cl)<sub>4</sub>.H<sub>2</sub>O Pnam DIETRICHITE (Zn,Fe,Mn)Al<sub>2</sub>(SO<sub>4</sub>)<sub>4</sub>.22H<sub>2</sub>O P2 DITTMARITE (NH<sub>4</sub>)MgPO<sub>4</sub>.H<sub>2</sub>O Pmn2<sub>1</sub> DORFMANITE Na<sub>2</sub>(PO<sub>3</sub>OH).2H<sub>2</sub>O Orth. s.g.? DYPINGITE Mg5(CO3)4(OH)2.5H2O S.? EKATERINITE Ca<sub>2</sub>B<sub>4</sub>O<sub>7</sub>(Cl,OH)<sub>2</sub>.2H<sub>2</sub>O P6/m ●ELPIDITE Na<sub>2</sub>ZrSi<sub>6</sub>O<sub>15</sub>.3H<sub>2</sub>O Pbcm EUGSTERITE Na<sub>4</sub>Ca(SO<sub>4</sub>)<sub>3</sub>.2H<sub>2</sub>O Mon. s.g.? FELSÖBÁNYAITE Al<sub>4</sub>SO<sub>4</sub>(OH)<sub>10</sub>.5H<sub>2</sub>O Hex. s.g.? FERRISTRUNZITE Fe<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub>(OH)<sub>3</sub>5H<sub>2</sub>O P1... FERROSTRUNZITE Fe<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub>(OH)<sub>2</sub>.6H<sub>2</sub>O P 1 GEORGEITE Cu<sub>5</sub>(CO<sub>3</sub>)<sub>3</sub>(OH)<sub>4</sub>.6H<sub>2</sub>O Amorph. GINITE Fe<sub>5</sub>(PO<sub>4</sub>)<sub>4</sub>(OH)<sub>2</sub>.2H<sub>2</sub>O P2/a GOWERITE CaB<sub>6</sub>O<sub>8</sub>(OH)<sub>4</sub>.3H<sub>2</sub>O P2<sub>1</sub>/a GRANTSITE Na<sub>4</sub>Ca<sub>0.7</sub>V<sub>12</sub>O<sub>32</sub>.8H<sub>2</sub>O C2/m...

GRUMANTITE NaSi2O4(OH).H2O Fdd2 HALURGITE Mg2(B4O5(OH)4)2.H2O P2/C HELMUTWINKLERITE PbZn<sub>2</sub>(AsO<sub>4</sub>)<sub>2</sub>,2H<sub>2</sub>O P1... HISINGERITE Fe<sub>2</sub>Si<sub>2</sub>O<sub>5</sub>(OH)<sub>4</sub>.2H<sub>2</sub>O Mon. ? (Amorph.)  $\label{eq:huemulite} \textbf{HUEMULITE} \ \ \textbf{Na}_{4} \textbf{Mg} \textbf{V}_{10} \textbf{O}_{28}. \textbf{24} \textbf{H}_{2} \textbf{O}\_\textbf{P1}...$ HUMMERITE KMgV5O14.8H2O P 1 HYDROBASALUMINITE Al<sub>4</sub>SO<sub>4</sub>(OH)<sub>10</sub>.15H<sub>2</sub>O Mon. s.g.? HYDROCALUMITE Ca<sub>4</sub>Al<sub>2</sub>(OH)<sub>12</sub>(Cl,CO<sub>3</sub>,OH,H<sub>2</sub>O)<sub>2,5</sub>.4H<sub>2</sub>O HYDROGLAUBERITE Na<sub>10</sub>Ca<sub>3</sub>(SO<sub>4</sub>)<sub>8</sub>.6H<sub>2</sub>O S.? IANTHINITE UO2(UO3)5.10H2O Orth. s.g.? IRIGINITE U(MoO<sub>4</sub>)<sub>2</sub>(OH)<sub>2</sub>.2H<sub>2</sub>O Mon. s.g.? JAMBORITE (Ni,Fe)<sub>8</sub>SO<sub>4</sub>(OH)<sub>16</sub>.nH<sub>2</sub>O Hex. s.g.? JENNITE Ca<sub>9</sub>Si<sub>6</sub>O<sub>16</sub>(OH)<sub>10</sub>.6H<sub>2</sub>O Tric. S.g.? JOLIOTITE (UO2)CO3.2H2O Pmmm KAZAKHSTANITE Fe<sub>5</sub>V<sub>15</sub>O<sub>39</sub>(OH)<sub>9</sub>.8.5H<sub>2</sub>O C2/c... KENYAITE Na<sub>2</sub>Si<sub>22</sub>O<sub>41</sub>(OH)<sub>8</sub>.6H<sub>2</sub>O Mon. s.g.? KHADEMITE AI(SO<sub>4</sub>)F.5H<sub>2</sub>O Pcab KIMURAITE - (Y) CaY<sub>2</sub>(CO<sub>3</sub>)<sub>4</sub>.6H<sub>2</sub>O I mm2... KINGITE Al<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub>(OH,F)<sub>3</sub>.9H<sub>2</sub>O Tric. S.g.? KINICHILITE (H,Na)<sub>2</sub>(Fe,Mg,Zn)<sub>2</sub>(TeO<sub>3</sub>)<sub>3</sub>.3H<sub>2</sub>O P6<sub>3</sub>... KOKTAITE (NH<sub>4</sub>)<sub>2</sub>Ca(SO<sub>4</sub>)<sub>2</sub>.H<sub>2</sub>O P2<sub>1</sub>/m KONYAITE Na<sub>2</sub>Mg(SO<sub>4</sub>)<sub>2</sub>.5H<sub>2</sub>O P2<sub>1</sub>/c KORITNIGITE Zn(AsO3OH).H2O P 1 KOSTYLEVITE K2ZrSi3O9.H2O P21/a LAZARENKOITE (Ca,Fe)FeAs<sub>3</sub>O<sub>7</sub>.3H<sub>2</sub>O Orth. s.g.? LENNILENAPEITE  $K_7Mg_{48}(Si,Al)_{72}(O,OH)_{216}.16H_2O P \overline{1}$ ? LERMONTOVITE UPO4(OH).H2O(?) Ccca ●LIKASITE Cu<sub>3</sub>NO<sub>3</sub>(OH)<sub>5</sub>.2H<sub>2</sub>O Pc2<sub>1</sub>n LINDACKERITE H2Cu5(AsO4)4.9H2O P1... LITHOSITE K<sub>6</sub>Al<sub>4</sub>Si<sub>8</sub>O<sub>25</sub>.2H<sub>2</sub>O Mon. s.g.? LOKKAITE - (Y) CaY4(CO3)7.9H2O Pbmm.. LONECREEKITE NH<sub>4</sub>(Fe,Al)(SO<sub>4</sub>)<sub>2-</sub>12H<sub>2</sub>O Pa3 LOUGHLINITE Na<sub>2</sub>Mg<sub>3</sub>Si<sub>6</sub>O<sub>16</sub>.8H<sub>2</sub>O S.? LUDDENITE Cu<sub>2</sub>Pb<sub>2</sub>Si<sub>5</sub>O<sub>14</sub>.14H<sub>2</sub>O Mon. s.g.? MAGADIITE NaSi7O13(OH)3.3H2O Mon. s.g.? MELANOCERITE - (Ce) (Ce,Ca)<sub>5</sub>(Si,B)<sub>3</sub>O<sub>12</sub>(OH,F).nH<sub>2</sub>O(?) Amorph. (Hex.) META-ALUMINITE Al2SO4(OH)4.5H2O P21? MOHRITE (NH<sub>4</sub>)<sub>2</sub>Fe(SO<sub>4</sub>)<sub>2</sub>.6H<sub>2</sub>O P2<sub>1</sub>/c MORAESITE Be2PO4(OH).4H2O C2/c MPOROROITE AIWO<sub>3</sub>(OH)<sub>3</sub>.2H<sub>2</sub>O (Tric.) Mon. s.g.? NABAPHITE NaBaPO<sub>4</sub>.9H<sub>2</sub>O P2<sub>1</sub>3

Table 70S

### A<sub>p</sub>B<sub>q</sub>C<sub>r</sub>D<sub>s</sub>.nAq.(cont.)

### **MINERALS NOT YET CLASSIFIED (cont.)**

NASTROPHITE Na(Sr,Ba)PO4.9H2O P213 NIAHITE (NH<sub>4</sub>)(Mn,Mg,Ca)PO<sub>4</sub>.H<sub>2</sub>O Pmn2<sub>1</sub> ●NICKELBOUSSINGAULTITE (NH<sub>4</sub>)<sub>2</sub>(Ni,Mg)(SO<sub>4</sub>)<sub>2</sub>.6H<sub>2</sub>O P2<sub>4</sub>/a NIFONTOVITE Ca<sub>3</sub>(BO(OH)<sub>2</sub>)<sub>3</sub>.2H<sub>2</sub>O B2/b OTWAYITE Ni<sub>2</sub>CO<sub>3</sub>(OH)<sub>2</sub>,H<sub>2</sub>O Orth, s.g.? OYELITE Ca<sub>10</sub>B<sub>2</sub>Si<sub>8</sub>O<sub>29</sub>.12H<sub>2</sub>O Orth. s.g.? PARANATROLITE Na<sub>2</sub>(Al<sub>2</sub>Si<sub>3</sub>)O<sub>10</sub>.3H<sub>2</sub>O Fmm2 ... PARASCHOLZITE CaZn2(PO4)2.2H2O Cc... PENKVILKSITE Na<sub>4</sub>Ti<sub>2</sub>Si<sub>8</sub>O<sub>22</sub>.5H<sub>2</sub>O Pnca? PICKERINGITE MgAl<sub>2</sub>(SO<sub>4</sub>)<sub>4</sub>.22H<sub>2</sub>O P2 POKROVSKITE Mg2CO3(OH)2.0,5H2O P21/a RAITE (Na,Ca)<sub>4</sub>(Mn,Ti,Fe)<sub>3</sub>Si<sub>8</sub>(O,OH)<sub>24</sub>.9H<sub>2</sub>O(?) C222 RAMSBECKITE (Cu,Zn)<sub>15</sub>(SO<sub>4</sub>)<sub>4</sub>(OH)<sub>22</sub>.6H<sub>2</sub>O P2<sub>1</sub>/a RHOMBOCLASE HFe(SO<sub>4</sub>)<sub>2</sub>.4H<sub>2</sub>O Pnma ROGGIANITE Ca<sub>15</sub>(Si,Al,Be)<sub>48</sub>O<sub>90</sub>(OH)<sub>16</sub>.34H<sub>2</sub>O I 4/mcm ROSTITE AISO<sub>4</sub>(F,OH).5H<sub>2</sub>O Pcab ROUSEITE Pb2Mn(AsO3)2.2H2O P1... SACROFANITE (Na,Ca)<sub>9</sub>(Si,Al)<sub>12</sub>O<sub>24</sub>(OH,SO<sub>4</sub>)<sub>4</sub>.nH<sub>2</sub>O P63mc... SANTITE KB<sub>5</sub>O<sub>6</sub>(OH)<sub>4</sub>.2H<sub>2</sub>O Aba2 **SASAITE** (AI,Fe)<sub>6</sub>(PO<sub>4</sub>,SO<sub>4</sub>)<sub>5</sub>(OH)<sub>3</sub>,36H<sub>2</sub>O Orth. s.g.? **OSBORGITE** NaB<sub>5</sub>O<sub>6</sub>(OH)<sub>4</sub>.3H<sub>2</sub>O C2/c SCHULENBERGITE (Cu,Zn)<sub>7</sub>(SO<sub>4</sub>,CO<sub>3</sub>)<sub>2</sub>(OH)<sub>10</sub>.3H<sub>2</sub>O P3... SHAFRANOVSKITE (Na,K)<sub>6</sub>(Mn,Fe)<sub>3</sub>Si<sub>9</sub>O<sub>24.6</sub>H<sub>2</sub>O P3<sub>1</sub>m... SMOLIANINOVITE (Co,Ni,Mg,Ca)<sub>3</sub>(Fe<sup>+3</sup>,Al)<sub>2</sub>(AsO<sub>4</sub>)<sub>4</sub>.11H<sub>2</sub>O Orth. s.g.?

SONORAITE FeTeO3(OH).H2O P21C STANLEYITE VOSO4.6H2O Orth. s.g.? STILPNOMELANE (K,Ca,Na)(Fe,Mg,Al)<sub>12</sub>(Si,Al)<sub>16</sub>(O,OH)<sub>54</sub>.nH<sub>2</sub>O P 1 STRÄTLINGITE Ca2Al2SiO7.8H2O R 3m ●SUOLUNITE Ca<sub>2</sub>Si<sub>2</sub>O<sub>5</sub>(OH)<sub>2</sub>.H<sub>2</sub>O Fdd2 ●SYNGENITE K<sub>2</sub>Ca(SO<sub>4</sub>)<sub>2</sub>.H<sub>2</sub>O P2<sub>1</sub>/m THOMETZEKITE Pb(Cu,Zn)2(AsO4)2.2H2O S.? THOROSTEENSTRUPINE (Ca,Th,Mn)<sub>3</sub>Si<sub>4</sub>O<sub>11</sub>F.6H<sub>2</sub>O Amorph. Metamict TINTICITE Fe<sub>4</sub>(PO<sub>4</sub>)<sub>3</sub>(OH)<sub>3</sub>.5H<sub>2</sub>O P2... TOBERMORITE Ca5Si6O16(OH)2.xH2O C2221 TYRETSKITE- 1Tc Ca<sub>2</sub>B<sub>5</sub>O<sub>9</sub>(OH).H<sub>2</sub>O P 1... UMBITE K2ZrSi3O9.H2O P212121 VANALITE NaAl<sub>8</sub>V<sub>10</sub>O<sub>38</sub>.30H<sub>2</sub>O P2/m... VANTASSELITE Al4(PO4)3(OH)3.9H2O Pmam... VASHEGYITE Al<sub>11</sub>(PO<sub>4</sub>)<sub>9</sub>(OH)<sub>6</sub>.38H<sub>2</sub>O Pnma? VOLKOVSKITE Ca(B3O4(OH)2)2.H2O P21 VYACHESLAVITE UPO4(OH).2.5H2O Cmcm... WARDSMITHITE Ca<sub>5</sub>Mg(B<sub>4</sub>O<sub>7</sub>)<sub>6</sub>.30H<sub>2</sub>O Hex. s.g.? WOODWARDITE (Cu,Al)<sub>8</sub>SO<sub>4</sub>(OH)<sub>16</sub>.nH<sub>2</sub>O Trig. s.g.? XITIESHANITE FeSO<sub>4</sub>CI.6H<sub>2</sub>O P2<sub>1</sub>/a YAROSLAVITE Ca<sub>3</sub>Al<sub>2</sub>F<sub>10</sub>(OH)<sub>2</sub>,H<sub>2</sub>O Orth, s.g.? **ZAHERITE** Al<sub>12</sub>(SO<sub>4</sub>)<sub>5</sub>(OH)<sub>26</sub>,20H<sub>2</sub>O P 1? ZINCROSELITE Ca2Zn(AsO4)2.2H2O P21/C

### $A_pB_qC_rD_sE_x.nAq.$

### SHEET

AUTUNITE (H2O)10[Ca<sup>[6]</sup>{2\infty}[U<sup>[2+4]</sup>O2P<sup>t</sup>O4]2] | 4/mmm

 $\begin{array}{l} \textbf{HYDROXYAPOPHYLLITE} \\ \textbf{Ca}_{4}^{[7]}\textbf{K}^{[8]}(\textbf{OH},\textbf{F})(\textbf{H}_{2}\textbf{O})_{8}\{2\infty\}[\textbf{Sig}^{\dagger}\textbf{O}_{20}]^{s} & \textbf{P4/mnc} \\ \textbf{CARNOTITE} & \textbf{K}_{2}^{[1^{\dagger}]}(\textbf{H}_{2}\textbf{O})_{3}\{2\infty\}[\textbf{U}^{[2^{\star}5]}\textbf{O}_{2})_{2}(\textbf{V}_{2}^{[5]}\textbf{O}_{8})] & \textbf{P2}_{1}/\textbf{a} \\ \textbf{META-AUTUNITE} & \textbf{(H}_{2}\textbf{O})_{6}[\textbf{Ca}^{[6]}\{2\infty\}[\textbf{U}^{[2^{\star}4]}\textbf{O}_{2}\textbf{P}^{\dagger}\textbf{O}_{4}]_{2}] \\ \textbf{P4/nmm} \\ \textbf{METATORBERNITE} & \textbf{(H}_{2}\textbf{O})_{8}[\textbf{Cu}^{sq}\{2\infty\}[\textbf{U}^{[2^{\star}4]}\textbf{O}_{2}\textbf{P}^{\dagger}\textbf{O}_{4}]_{2}] \\ \textbf{P4/n} & (\approx \textbf{Meta-autunite}) \\ \textbf{MONTMORILLONITE} \\ \textbf{(H}_{2}\textbf{O})_{n}(\textbf{Na},\textbf{Ca})_{0.3}^{\circ}(\textbf{A}|,\textbf{Mg})_{2}^{\circ}(\textbf{OH})_{2}\{2\infty\}[\textbf{Si}_{4}^{\dagger}\textbf{O}_{10}]^{(2.8)c} & \textbf{C2/m} \\ \end{array}$ 

VERMICULITE (H<sub>2</sub>O)<sub>8</sub>Mg<sub>0.7</sub>°(Mg,Fe,Al)<sub>6</sub>°(OH)<sub>2</sub>{2∞}{(Si,Al)<sub>8</sub>¹O<sub>22</sub>}(<sup>2.s)c</sup> C2/c Pop.: TORBERNITE (H<sub>2</sub>O)<sub>10</sub>[Cu<sup>[6]</sup>{2∞}[U<sup>[2+4]</sup>O<sub>2</sub>P<sup>1</sup>O<sub>4</sub>]<sub>2</sub>]

URANOCIRCITE (H<sub>2</sub>O)<sub>10</sub>[Ba<sup>[6]</sup>{2∞}[U<sup>[2+4]</sup>O<sub>2</sub>P<sup>1</sup>O<sub>4</sub>]<sub>2</sub>]

URANOSPINITE (H<sub>2</sub>O)<sub>10</sub>[Ca<sup>[6]</sup>{2∞}[U<sup>[2+4]</sup>O<sub>2</sub>P<sup>2</sup>O<sub>4</sub>]<sub>2</sub>]

Deriv.: SALÉEITE (H<sub>2</sub>O)<sub>10</sub>[Mg<sup>[6]</sup>{2∞}[U<sup>[2+4]</sup>O<sub>2</sub>P<sup>2</sup>O<sub>4</sub>]<sub>2</sub>] P2<sub>1</sub>/c

SODIUM AUTUNITE (H<sub>2</sub>O)<sub>16</sub>[Nag<sup>[6]</sup>{2∞}[U<sup>[2+4]</sup>O<sub>2</sub>P<sup>2</sup>O<sub>4</sub>]<sub>2</sub>] P4/nmm

ZEUNERITE (H<sub>2</sub>O)<sub>16</sub>[Cu<sup>[6]</sup>{2∞}[U<sup>[2+4]</sup>O<sub>2</sub>A6·O<sub>4</sub>]<sub>2</sub>] 1 4/mmm

Pop.: FLUORAPOPHYLLITE Ca<sub>4</sub><sup>[7]</sup>Na<sup>[6]</sup>F(H<sub>2</sub>O)<sub>8</sub>{2∞}[Sis<sup>[6]</sup>O<sub>20</sub>]<sup>8</sup> Pnnm

Pop.: MARGARITASITE (Cs,H<sub>3</sub>O,K)<sub>2</sub><sup>[11]</sup>(H<sub>2</sub>O)<sub>2</sub>(2∞)[Sis<sup>[6]</sup>O<sub>20</sub>]<sup>8</sup> Pnnm

Pop.: META-ANKOLEITE (H<sub>2</sub>O)<sub>8</sub>[C<sub>2</sub><sup>[6]</sup>(2∞)[U<sup>[2+4]</sup>O<sub>2</sub>P<sup>2</sup>O<sub>4</sub>]<sub>2</sub>]

Deriv.: SINCOSITE (H<sub>2</sub>O)<sub>8</sub>[Ca<sup>[6]</sup>(2∞)[U<sup>[2+4]</sup>O<sub>2</sub>P<sup>2</sup>O<sub>4</sub>]<sub>2</sub>]

Pop.: METAZEUNERITE (H<sub>2</sub>O)<sub>8</sub>[Ca<sup>[6]</sup>(2∞)[U<sup>[2+4]</sup>O<sub>2</sub>A6·O<sub>4</sub>]<sub>2</sub>]

 $\begin{array}{lll} Pop.: & BEIDELLITE & (H_2O)_m(Na,Ca)_{0.3}Al_2^o(OH)_2\{2\infty\}_{\{(Si,AI)_4^{1}O_{10}\}_{2}^{(2a)c}} \\ & NONTRONITE & (H_2O)_nNa_{0.3}^oFe_2^o(OH)_2\{2\infty\}_{\{(Si,AI)_4^{1}O_{10}\}_{2}^{(2a)c}} \\ Deriv.: & VOLKONSKOITE & (H_2O)_4Ca_{0.3}^o(Cr,Mg)_2^o(OH)_2\{2\infty\}_{\{(Si,AI)_4^{1}O_{10}\}_{2}^{(2a)c}} \\ & Mon.s.g.? \end{array}$ 

### **FRAMEWORK**

PHILLIPSITE  $K^{[12]}(Ca_{0.5},Na)_2^{[6]}(H_2O)_6\{3\infty\}[Si_5^{+}Al_3^{+}O_{16}]$  P2<sub>1</sub>/m (Zeolite) STILBITE  $Na^{[6]}Ca_4^{[6]}(H_2O)_3\{3\infty\}[Si_{27}^{+}Al_9^{+}O_{72}]$  C2/m (Zeolite) THOMSONITE  $NaCa_2(H_2O)_6\{3\infty\}[Al_5^{+}Si_5^{+}O_{20}]$  Pncn (Zeolite) TURQUOISE  $Cu^{[6]}(H_2O)_4\{3\infty\}[Al_6^{+}(OH)_8(P^{+}O_4)_4]$  P  $\bar{1}$  WILLHENDERSONITE  $(KCa\square_4)(H_2O)_5[3\infty][Al_3^{+}Si_3^{+}O_{12}]$  P  $\bar{1}$  (Dist.subs.d.Chabazite.Zeolite)

Deriv.: HARMOTOME  $Ba^{1/2}(Ca_{0.5},Na)^{(9)}(H_2O)_{12}\{3\infty\}[Si_{11}{}^tAl_5{}^tO_{32}]$  $P2_1/m...$  Table 71S

### $A_pB_qC_rD_sE_x.nAq.(cont.)$

### MINERALS TENTATIVELY CLASSIFIED

**ABERNATHYITE** (H<sub>2</sub>O)<sub>3</sub>K<sup>[6]</sup>{2∞}[U<sup>[2+4]</sup>O<sub>2</sub>As<sup>t</sup>O<sub>4</sub>] P4/ncc (≈Meta-ankoleite,≈Meta-torbernite) ALUMINOPHARMACOSIDERITÉ  $\begin{array}{lll} \text{Al}_{4}^{\text{A}}\text{As}_{3}^{\text{t}}[\text{O}_{12}(\text{OH})_{4}(\text{H}_{2}\text{O})_{6};\text{K}] & \text{P} & \text{43}m \\ \text{AMICITE} & \text{K}_{2}^{\text{I7}}\text{Na}_{2}^{\text{[6]}}(\text{H}_{2}\text{O})_{\text{5}}\{\text{3}\omega\}[\text{Al}_{4}^{\text{t}}\text{Si}_{4}^{\text{t}}\text{O}_{16}] & \text{I} & \text{2} & \text{(Zeolite)} \\ \text{ARISTARAINITE} & \text{Na}_{2}^{\text{[5y]}}\text{Mg}_{9}^{\text{c}}(\text{H}_{2}\text{O})_{4}\{\text{2}\omega\}[\text{B}_{3}^{\text{t}}\text{B}_{3}^{\text{tr}}\text{O}_{8}(\text{OH})_{4}] \end{array}$ **ARMENITE**  $3\infty[Ca_2^{\circ}Al_6^{t}Si_9^{t}O_{30}(H_2O)_2Ba^{[12]}]$  Pnna (=Milarite) ARSENIOSIDERITE Ca<sub>2</sub><sup>[7]</sup>(H<sub>2</sub>O)<sub>3</sub>{2w}[Fe<sub>3</sub>°As<sub>3</sub><sup>t</sup>O<sub>12</sub>] A2/a (=Mitridatite) ARTHURITÉ Cu°Fe2°As2<sup>t</sup>[O8(OH)2(H2O)4]<sup>c/h</sup> P21/C (Subs.deriv.Whitmorite,=Earlshnnonite) AUBERTITE  $Cu^{\circ}Al^{\circ}S_{2}^{i}[O_{8}(H_{2}O)_{14}Cl] P \bar{1}$ BASSETITE  $(H_{2}O)_{8}[Fe^{[6]}[2\infty][U^{[2^{*4}]}O_{2}P^{i}O_{4}]_{2}] P6_{3}/mmc$ (≈Metatorbemite) **BAYLDONITE**  $(H_2O)\{2\infty\}\{(Cu,Zn)_3Pb^{[8ap]}(As^tO_4)_2(OH)_2\}$ BEYLEYTE  $(H_2O)_{18}\{3\infty\}[Mg_2^OUO_2(CO_3)_3]$  C2/c ( $\approx$ Liebijite) BECQUERELITE (H<sub>2</sub>O)<sub>8</sub>Ca<sup>[5]</sup>{2∞}[(UO<sub>2</sub>)<sub>6</sub>O<sub>4</sub>(OH)<sub>6</sub>] Pn2<sub>1</sub>a BERAUNITE Fe<sub>6</sub>°P<sub>4</sub><sup>t</sup>[O<sub>16</sub>(OH)<sub>5</sub>(H<sub>2</sub>O)<sub>6</sub>] C2/c (≈Strunzite) BILLIETITE  $(H_2O)_4Ba\{2\infty\}[(UO_2)_6O_4(OH)_6]$  Pbn2<sub>1</sub> (≈Becquerelite) **BOTRYOGEN** Mg $^{\circ}$ Fe $^{\circ}$ S<sub>2</sub><sup>t</sup>[O<sub>8</sub>(OH)(H<sub>2</sub>O)<sub>7</sub>] P2<sub>1</sub>/n **BRUGNATELLITE**  $(H_2O)_4C^{tr}O_3\{2\underline{\infty}\}[Mg_6°Fe°(OH)_{1\underline{3}}]$  P  $\overline{3}$ ... **BULFONTEINITE**  $(H_2O)\{2\infty\}\{Ca_2^{[7]}Si^{\dagger}O_3(OH)F\}$  P  $\overline{1}$ CAMINITE Mg°Mg<sub>x</sub>°S<sup>t</sup>[O<sub>4</sub>(OH)<sub>2</sub>(H<sub>2</sub>O)<sub>v</sub>] | 4<sub>1</sub>/amd CAMPIGLIAITE  $Cu_4$ °Mn° $S_2$ <sup>t</sup> $[O_8(OH)_6(H_2O)_4]$  C2 (≈Devilline) CAVANSITE (H<sub>2</sub>O)<sub>4</sub>{3∞}[Ca<sup>[7]</sup>V<sup>[5y]</sup>Si<sub>4</sub><sup>t</sup>O<sub>11</sub>] Pcmn CHILDRENITE (Fe,Mn)°Al°P¹[O<sub>4</sub>(OH)<sub>2</sub>(H<sub>2</sub>O)] Bba2 (Eosphorite) **COALINGITE** Mg<sub>10</sub>°Fe<sub>2</sub>°C<sup>tr</sup>[O<sub>3</sub>(OH)<sub>24</sub>(H<sub>2</sub>O)<sub>2</sub>] R 3m

CUPROCOPIAPITE (H<sub>2</sub>O)<sub>6</sub>{1\omega}[Cu<sup>o</sup>Fe<sub>3</sub>oS<sub>6</sub>tO<sub>24</sub>(OH)<sub>2</sub>(H<sub>2</sub>O)<sub>8</sub>]  $\{g\}[Fe^{\circ}(OH)_{6}]$  P  $\bar{1}$  (Subs.d.Copiapite) CURIÉNITE Pb<sup>[8]</sup>( $H_2O$ )<sub>5</sub>{2 $\infty$ }[( $UO_2$ ) $V_2O_8$ ] Pcan

(=Francevillite)

 $\begin{array}{ll} \textbf{DARAPSKITE} & \text{Na}_2^{\text{O}} \text{Na}_1^{\text{(I)}} (\text{H}_2\text{O}) \{g\} [\text{S}^{\text{IO}}_4] \{g\} [\text{N}^{\text{IO}}_0] & \text{P2}_1/\text{m} \\ \textbf{DESPUJOLSITE} & (\text{H}_2\text{O})_3 \{\infty\} [\text{Ca}^{\text{(I)}} \text{Mn}^{\text{(I)}} \text{S}_2^{\text{IO}} \text{O}_8 (\text{OH})_6] & \text{P $\bar{6}$2c} \\ \end{array}$ 

**DEVILLINE** Ca<sup>[7]</sup>(H<sub>2</sub>O)<sub>3</sub>{g}[S<sup>t</sup>O<sub>4</sub>]<sub>2</sub>{2\infty}[Cu<sub>4</sub><sup>[6]</sup>(OH)<sub>6</sub>] P2<sub>1</sub>/c **DRESSERITE**  $(H_2O)_3\{3\infty\}[Ba_2AI_4(OH)_4\{g\}[C^{tr}O_3]_4]$  Pbmm DUFRENITE 300[Ca<sub>0.5</sub>°Fe<sub>6</sub>°P<sub>4</sub><sup>t</sup>O<sub>16</sub>(OH)<sub>6</sub>(H<sub>2</sub>O)<sub>2</sub>] C2/c **DUNDASITE** (H<sub>2</sub>O){3∞}{Pb<sup>[9]</sup>Al<sub>2</sub>°(OH)<sub>4</sub>{g}{C<sup>tr</sup>O<sub>3</sub>]<sub>2</sub>] Pbnm EARLSHANNONITE (Mn,Fe)°Fe2°P2<sup>t</sup>[O8(OH)2(H2O)4]° P2<sub>1</sub>/c (Subs.d.Whitmoreite)

EOSPHORITE (Mn,Fe)°Al°P¹[O<sub>4</sub>(OH)<sub>2</sub>(H<sub>2</sub>O)] Bbam (=Childrenite)

EPISTILBITE Na<sup>[9]</sup>Ca<sub>3</sub><sup>[9]</sup>(H<sub>2</sub>O)<sub>16</sub>{3∞}[Al<sub>6</sub><sup>t</sup>Si<sub>18</sub><sup>t</sup>O<sub>48</sub>] C2/m

ETTRINGITE Ca<sub>6</sub><sup>[8]</sup>Al<sub>2</sub>°S<sub>3</sub><sup>1</sup>[O<sub>12</sub>(OH)<sub>12</sub>(H<sub>2</sub>O)<sub>26</sub>] P31c (≈Thaumasite)

**FEDORITE**  $(K,Na)_{2.5}(Ca,Na)_7^{\circ}(OH,F)_2(H_2O)\{2\infty\}[Si_{16}O_{38}]$ C 1 (Calciotalc)

**FERRICOPIAPITE** 

 $(H_2O)_6(Fe,AI,Mg)^0{1\infty}[Fe_2^0S_3^1O_{12}(OH)(H_2O)_4]_2{g}[Fe^0(H_2O)_6]$ P 1 (Inser.d.Copiapite)

FLEISCHERITE [300][Pb3[9]Ge°S2[O8(OH)8(H2O)3] P 62c (=Schaurteite)

FLUELLITE Al<sub>2</sub>°P<sup>t</sup>[O<sub>4</sub>F<sub>2</sub>(OH)(H<sub>2</sub>O)<sub>7</sub>] Fddd FOGGITE {3∞}[Ca<sup>(8)</sup>Al°PO<sub>4</sub>(OH)<sub>2</sub>(H<sub>2</sub>O)] A2<sub>1</sub>22 FOURMARIERITE Pb[6+3](H2O)4[200][U4[2+5]O11(OH)4] Bb2₁m

**FRANCEVILLITE** (Ba,Pb)<sup>[8]</sup>(H<sub>2</sub>O)<sub>5</sub>{2 $\infty$ }[(UO<sub>2</sub>)<sub>2</sub>V<sub>2</sub>O<sub>8</sub>] Pcan (=Curiénite)

FRITZSCHEITE (H<sub>2</sub>O)<sub>4</sub>[Mn<sup>[6]</sup>{2∞}[U<sup>[2+4]</sup>O<sub>2</sub>V<sup>†</sup>O<sub>4</sub>]<sub>2</sub>] Pnma (≈Autunite)

**GARRONITE** NaCa<sub>2.5</sub>(H<sub>2</sub>O)<sub>13</sub>{2 $\infty$ }[Al<sub>6</sub><sup>t</sup>Si<sub>10</sub><sup>t</sup>O<sub>32</sub>] I 4<sub>1</sub>/amd? (Zeolite)

GEORGECHAOITE K°Na°Zr°(H2O)2{1∞}[Si3<sup>t</sup>O9] P21nb (≈Gaidonnayite)

GOBBINSITE (Na,K)<sub>4</sub>Ca(H<sub>2</sub>O)<sub>12</sub>{3∞}[Al<sub>6</sub><sup>t</sup>Si<sub>10</sub>O<sub>32</sub>] Pmn2<sub>1</sub>

**GORDONITE**  $Mg^{\circ}Al_2^{\circ}P_2^{t}[O_8(OH)_2(H_2O)_8]$  P  $\overline{1}$  ( $\approx$ Laueite) GUILDITE Cu°Fe°S2<sup>1</sup>[O8(OH)(H2O)4] P21/m **HAIWEEITE**  $(H_2O)_5\{3\infty\}[Ca(UO_2)_2Si_6{}^tO_{15}]$  P2/c

HANNAYITE Mg3°P4<sup>t</sup>[(NH4)2O12(OH)4(H2O)8] P 1

**HEINRICHITE** Ba(H<sub>2</sub>O)<sub>10</sub>{2∞}[U°As<sup>t</sup>O<sub>12</sub>] | 4/mmm... (≈Zeunerite)

HYDROBIOTITE K[12](Mg,Fe)6°(H2O)x[2\infty][(Si,Al)8<sup>t</sup>O20][2s)c

**HYDROBORACITE**  $Ca^{[8]}Mg^{[6]}(H_2O)_3\{1\infty\}[B_2^tB^{tr}O_4(OH)_3]_2$ P2/c

**HYDROCHLORBORITE** 

 $[CI(H_2O)_5]Ca_2(H_2O)_3\{1\infty\}[B_2^tB^{tr}(OH)_4]$  | 2/a **HYDRODRESSERITE**  $(H_2O)_3\{3\infty\}[Ba^{[9]}Al_2^{o}(OH)_4\{g\}[C^{tr}O_3]_2]$ P 1 (≈Dundarite)

INDERBORITE  $(H_2O)_2\{2\infty\}[Ca^{[8]}Mg^0B_4{}^tB_2{}^tO_6(OH)_{10}(H_2O)_4]$ 

INESITE (H<sub>2</sub>O)<sub>5</sub>{3∞}[Ca<sub>2</sub><sup>[7y]</sup>Mn<sub>7</sub>°Si<sub>10</sub><sup>t</sup>O<sub>28</sub>(OH)<sub>2</sub>] P 1 KAINITE KIRO CI(H2O)3(20)[Mg°StO4] C2/m

**KAMBALDAITE**  $(H_2O)_3\{3\infty\}[Na^{[6]}Ni_4{}^0\{g\}[C^{ir}O_3]_3(OH)_3]$  P6<sub>3</sub> **KASOLITE** Pb<sub>2</sub><sup>8]</sup> $(H_2O)_2\{2\infty\}[(U^{[7]}O_2)_2(S^{ir}O_4)_2]$  P2<sub>1</sub>/a (≈Uranophane)

**KEHOEITE**  $(Zn,Ca)(H_2O)_5{3\infty}[P_2^tAl_2^tO_8(OH)_2]$  | a  $\overline{3}d$ (≈Analcime cubic)

LABUNTSOVITE (Ti,Nb)9°Si<sub>16</sub><sup>t</sup>[O<sub>48</sub>(O,OH)<sub>10</sub>(H<sub>2</sub>O)<sub>x</sub>(K,Na)<sub>8</sub>]

LANDESITE (Mn,Mg)<sub>9</sub>°Fe<sub>3</sub>°P<sub>8</sub><sup>t</sup>[O<sub>32</sub>(OH)<sub>3</sub>(H<sub>2</sub>O)<sub>9</sub>] Pbna 

P2<sub>1</sub>/c (=Torreyite) **LAWSONITE** Ca<sup>[8]</sup>(H<sub>2</sub>O){ $3\infty$ }[Al<sub>2</sub>°(OH)<sub>2</sub>{g}[Si<sub>2</sub><sup>1</sup>O<sub>7</sub>]] Ccmm **LEMOYNITE** (Na,K)<sub>2</sub><sup>[5/7]</sup>Ca<sup>[6]</sup>(H<sub>2</sub>O)<sub>5-6</sub>{ $3\infty$ }[Zr<sub>2</sub>°Si<sub>10</sub>\*O<sub>26</sub>] C2/c **LEUCOPHOSPHITE** 

 $K^{(6)}(H_2O)\{3\infty\}[(Fe,AI)_2^{\circ}(P^tO_4)_2(OH)(H_2O)]$  P2<sub>1</sub>/n (=Tinsleyite) **LEVYNE** NaCa<sub>2.5</sub>(H<sub>2</sub>O)<sub>18</sub>( $3\infty$ )[Si<sub>12</sub><sup>t</sup>Al<sub>6</sub><sup>t</sup>O<sub>36</sub>] R  $\bar{3}$ m (Zeolite) LIEBIGITE Ca<sub>2</sub><sup>[8]</sup>(H<sub>2</sub>O)<sub>11</sub>{2∞}[UO<sub>2</sub>{g}[C<sup>tr</sup>O<sub>3</sub>]<sub>3</sub>] Bba2 **LIOTTITE**  $(Ca,Na)8(H_2O)_2(SO_4,CI,OH)_4\{3\infty\}[(Si,AI)_{12}^tO_{24}]$ P6 (≈Cancrinite) LIROCONITE Cu2ºAlºAst[O4(OH)4(H2O)4] 1 2/a

Table 72S

(≈Zeolite)

(≈Cavansite)

### $A_pB_qC_rD_sE_x.nAq.(cont.)$

### **MINERALS TENTATIVELY CLASSIFIED (cont.)**

**LOVDARITE**  $K_2Na_6(H_2O)_9\{3\infty\}[Si_{14}{}^tBe_4{}^tO_{36}]$   $P2_12_12$ LÜNEBURGITE  $(H_2O)_5(2\infty)[Mg_3^{\circ}B^t(OH)_3(P^tO_4)_2]$  P  $\bar{1}$  MACDONALDITE  $Ba^{(10)}Ca_4^{(6)}(HO)_2(H_2O)_{10}\{2\infty\}[Si_{16}^{t}O_{36}]$ Cmcm (≈Hydroxyapophyllite) MAGNESIOAUBERITE (Mg,Cu)°Al°S2<sup>t</sup>[O8(H2O)14Cl] P 1 (=Auberite)  $\textbf{MAGNESIOCOPIAPITE}(H_2O)_6\{1\infty\}[\textbf{Mg}^0\textbf{Fe}_3{}^0\textbf{S}_6{}^{\textbf{t}}\textbf{O}_{24(}(\textbf{OH})_2$  $(H_2O)_8$  {g}[Fe° $(H_2O)_6$ ] P 1 (Subs.deriv.Copiapite) MAPIMITE Zn2°Fe3°As3<sup>t</sup>[O12(OH)4(H2O)10] Cm **MAZZITE**  $K_2CaMg(H_2O)_{28}\{3\infty\}[(Si,Al)_{36}^{L}O_{72}]$  P6<sub>3</sub>/mmc... (≈Gmelinite,Zeolite) MERLINOITE (K,Na)<sub>5</sub>(Ba,Ca)<sub>2</sub>(H<sub>2</sub>O)<sub>24</sub>{3∞}[(Si<sub>23</sub>Al<sub>9</sub>)O<sub>64</sub>]  $\begin{array}{ll} \text{I mmm (Zeolite)} \\ \textbf{MESOLITE} & \text{Na}_2^{[6]}\text{Ca}_2^{[7]}(\text{H}_2\text{O})_8\{3\infty\}[\text{Al}_6{}^t\text{Si}_9{}^t\text{O}_{30}] & \text{Fdd2} \end{array}$ (≈Natrolite,Zeolite) **METAHEINRICHITE**  $(UO_2)_2Ba\{2\infty\}[(U^{[2+4]}O_2As^tO_4)_2]$   $P4_2...$ **METATYUYAMUNITE**  $Ca(H_2O)_3\{2\infty\}[(UO_2)_2V_2O_8]$  Pnam (≈Carnotite) META-URANOCIRCITE-I (H<sub>2</sub>O)<sub>8</sub>[Ba {2∞}[U<sup>[2+4]</sup>O<sub>2</sub>P<sup>t</sup>O<sub>4</sub>]<sub>2</sub>] P4<sub>2</sub>/n... (≈Meta-autunite) **META-URONOSPINITE**  $(H_2O)_8[Ca^{[6]}\{2\infty\}[U^{[2+4]}O_2P^tO_4]_2]$ P4/nmm (≈Meta-autunite) METAVAUXITE Fe°Al<sub>2</sub><sup>1</sup>P<sub>2</sub><sup>1</sup>[O<sub>8</sub>(OH)<sub>2</sub>(H<sub>2</sub>O)<sub>8</sub>] P2<sub>1</sub>/c MILARITE (H<sub>2</sub>O)(K,Na)<sup>112</sup>|Ca<sub>2</sub>°(Be,Al)<sub>3</sub><sup>1</sup>{g}[Si<sub>12</sub><sup>1</sup>O<sub>30</sub>] P6/mcc MINYULITÉ K<sup>[8]</sup>{2\infty}[Al2\inftyP2^tO8(OH,F)(H2O)4] Pba2 MITRIDATITE Ca<sub>2</sub><sup>[7]</sup>(H<sub>2</sub>O)<sub>3</sub>{2∞}[Fe<sub>3</sub>°P<sub>3</sub><sup>t</sup>O<sub>12</sub>] A2/a (=Arseniosiderite) MONTEREGIANITE-(Y) K2[10](H2O)10Na4°Y2°{2∞}[Si16<sup>t</sup>O38] P2₁/n (≈Hydroxyapophyllite) **MURMANITE** Na<sub>3</sub>°(Ti,Nb)<sub>4</sub>°Si<sub>4</sub><sup>t</sup>[O<sub>18</sub>(H<sub>2</sub>O)<sub>4</sub>] P  $\bar{1}$ ? (≈Bafertisite) NATROCHALCITE Na<sup>[8]</sup>{2\infty}{Cu2\infty}S2\text{tO}8(OH)(H2O)] C2/m **NATRODUFRENITE**  $\{3\infty\}[Na^{\circ}Fe_{6}^{\circ}P_{4}^{\dagger}O_{16}(OH)_{6}(H_{2}O)_{2}]$  C2/c **NENADKEVICHITE**  $Na^{[6]}(H_2O)_2\{3\infty\}\{\{3\infty\}\{(Nb,Ti)^0Si_2^tO_6(O,OH)\}\}$  Pbam NOVÁCEKITE (H<sub>2</sub>O)<sub>9</sub>[Mg<sup>(6)</sup>{2\omega}[U<sup>[2+4]</sup>O<sub>2</sub>As<sup>t</sup>O<sub>4</sub>] P4<sub>2</sub>/n (≈Autunite) **OHMILITE** Sr<sub>2</sub><sup>[9]</sup>Sr<sup>[8]</sup>(Ti,Fe)°(O,OH)(H<sub>2</sub>O)<sub>2</sub>{1∞}[Si<sub>4</sub><sup>t</sup>O<sub>12</sub>] P2<sub>1</sub>/m **OJUELAITE** Zn°Fe<sub>2</sub>°As<sub>2</sub><sup>t</sup>[O<sub>8</sub>(OH)<sub>2</sub>(H<sub>2</sub>O)<sub>4</sub>]<sup>c/n</sup> P2<sub>1</sub>/c (≈Arthurite) **ORTHOSERPIERITE**  $\{3\infty\}[Ca^{[7]}(Cu,Zn)_4^{[6]}S_2^{t}O_8(OH)_6(H_2O)_3]$ Pca2₁ (≈Serpierite) **PAHASAPAITE**  $\text{Li}_{8}^{[6p1c]}(\text{Ca,Li,K})_{10.5}^{[6p1c]}(\text{H}_{2}\text{O})_{38}\{3\infty\}[\text{Be}_{24}^{\phantom{24}\text{t}}\text{P}_{24}^{\phantom{24}\text{t}}\text{O}_{96}]$  I 23 (≈Zeolite) PARAUMBITE  $K_3Zr_2^0(H_2O)_3\{1\infty\}[Si_3O_9]_2$ . Orth. s.g.? (≈Wollastonite) PARAVAUXITE Fe°Al₂°P₂¹[O<sub>8</sub>(OH)₂(H₂O)<sub>8</sub>] P 1 (≈Laueite) PARTHÉITE Ca<sub>2</sub>Al<sub>4</sub>°(OH)<sub>2</sub>(H<sub>2</sub>O)<sub>4</sub>(3\omega)[Si<sub>4</sub><sup>†</sup>O<sub>15</sub>] C2/c

PENTAGONITE (H<sub>2</sub>O)<sub>4</sub>(3∞)[Ca<sup>[7]</sup>V<sup>[5y]</sup>Si<sub>4</sub><sup>t</sup>O<sub>11</sub>] Ccm2<sub>1</sub>

**PETARASITE**  $Na_5^{[7]}(CI,OH)(H_2O)_2\{3\infty\}[Zr_2^oSi_6^tO_{18}]$   $P2_1/m$ PHARMACOSIDERITE  $K(OH)_4(H_2O)_{6-7}(3\infty)[Fe_4{}^0As_3{}^tO_{12}]$ P 43m POLYHALITE K<sub>2</sub><sup>[11]</sup>(H<sub>2</sub>O)<sub>2</sub>{3∞}[Ca<sub>2</sub><sup>[8]</sup>Mg<sup>o</sup>Si<sub>4</sub>O<sub>16</sub>] P 1 POUGHITE Fe<sub>2</sub><sup>o</sup>(H<sub>2</sub>O)<sub>3</sub>(g)[Te<sup>(4)</sup>O<sub>3</sub>(g)[SO<sub>4</sub>] Pmnb PROBERTITE Na<sup>[6]</sup>Ca<sup>[9]</sup>(H<sub>2</sub>O)<sub>3</sub>(1∞)[B<sub>3</sub>\*B<sub>2</sub>\*TO<sub>7</sub>(OH)<sub>4</sub>] P2<sub>1</sub>/c PSEUDOLAUEITE Mn°Fe2°P2<sup>t</sup>[O8(OH)2(H2O)7-8] P21/a **RECTORITE**  $(H_2O)_2(Na,Ca)AI_4^o(OH)_4\{2\infty\}[(Si,AI)_8^tO_{20}]^{(2.5)c}$ Mon.s.g.? (≈Montmorillonite) **REEVESITE**  $Ni_6{}^{\circ}Fe_2{}^{\circ}(OH)_{16}\{2\infty\}[(C^{tr}O_3)(H_2O)_4]$  R3m (=Pyroaurite) **RHODESITE**  $(H_2O)_{10}(K,Na)_2Ca_4(OH)_2\{2\infty\}[Si_{16}C_{36}]$  Pmam **ROBERTSITE**  $Ca_2^{[7]}(H_2O)_3\{2\infty\}[Mn_3^0P_3^tO_{12}]$  A2/a (=Arseniosiderite) SANTACLARAITE (H<sub>2</sub>O)Hca<sup>o</sup>Mn<sub>4</sub>o(OH){1∞}[Si<sub>5</sub>to<sub>15</sub>] B 1 (≈Rhodonite) SAPONITE  $(H_2O)_4(Ca,Na)_{0.3}(Mg,Fe)_3^{\circ}(OH)_2\{2\infty\}[(Si,Al)_4^{t}O_{10}]^{(2.6)c}$  Cc **SAUCONITE** (H<sub>2</sub>O)<sub>4</sub>Na<sub>0.3</sub>Zn<sub>3</sub>(OH)<sub>2</sub>{2∞}{(Si,Al)<sub>4</sub><sup>t</sup>O<sub>10</sub>]<sup>(2.s)c</sup> Cc (≈Vermiculite) **SAZHINITE-(Ce)**  $(H_2O)_6Hna^{[5]}Ce^{[6+1]}\{2\infty\}[Si_6^{1}O_{15}]$  Pmm2 SCAWTITE Ca<sub>7</sub>°Si<sub>6</sub><sup>t</sup>C<sup>tr</sup>[O<sub>21</sub>(H<sub>2</sub>O)<sub>2</sub>] I 2/m SCHAURTEITE {3∞}[Ca<sub>3</sub><sup>[9]</sup>Ge°S<sub>2</sub><sup>tO</sup><sub>8</sub>(OH)<sub>6</sub>(H<sub>2</sub>O)<sub>3</sub>] P6<sub>3</sub>/mmc... (=Fleischerite) SCHERTELITE {3\infty}[Mg^\tilde{P}\_2^tO\_6(NH\_4)\_2(OH)\_2(H\_2O)\_4] Pbca SERPIERITE {300}[Ca<sup>[7]</sup>(Cu,Zn)<sub>4</sub>°S<sub>2</sub>\*O<sub>8</sub>(OH)<sub>6</sub>(H<sub>2</sub>O)<sub>3</sub>] C2/c **SIGLOITE**  $Fe^{\circ}Al_2^{\circ}P_2^{\dagger}[O_8(OH)_2(H_2O)_8]$  P 1 (=Laueite) **SJÖGRENITE** Mg<sub>6</sub>°Fe<sub>2</sub>°C<sup>tr</sup>[O<sub>3</sub>(OH)<sub>16</sub>(H<sub>2</sub>O)<sub>4</sub>] P6<sub>3</sub>/mmc (=Barbertonite) SÖRENSENITE Na<sub>4</sub><sup>[7]</sup>Be<sub>2</sub><sup>t</sup>Sn<sup>o</sup>(H<sub>2</sub>O)<sub>2</sub>{1∞}{Si<sub>3</sub><sup>t</sup>O<sub>9</sub>]<sub>2</sub><sup>my</sup> C2/c (≈Wollastonite) STERCORITE Na $^{\circ}$ P<sup>t</sup>[O<sub>3</sub>(OH)(NH<sub>4</sub>)(H<sub>2</sub>O)<sub>4</sub>] P  $\overline{1}$  ( $\approx$ Laueite) STEWARTITE  $Mn^{\circ}Fe_2^{\circ}P_2^{\circ}[O_8(OH)_2(H_2O)_8] P \overline{1}$  ( $\approx$ Laueite) **STICHTITE**  $Mg_6{}^{\circ}Cr_2{}^{\circ}(OH)_{16}\{2\infty\}[(C^{tr}O_3)(H_2O)_4]$  R3m... (=Pyroaurite) STRONTIODRESSITE  $(OH)_4{3\infty}[(Sr,Ca)^{[9]}Al_2^{\circ}(H_2O)\{g\}[C^{tr}O_3]_2]$  Pbnm (=Dundasite) STRUNZITE Mn°Fe<sub>2</sub>°P2<sup>t</sup>[O<sub>8</sub>(OH)<sub>2</sub>(H<sub>2</sub>O)<sub>6</sub>] P 1 (~Laueite) SVYAZHINITE (Mg,Mn)°(AI,Fe)°S2<sup>t</sup>[O<sub>8</sub>(H<sub>2</sub>O)F] P1... (≈Aubertite) TARANAKITE (AI,Fe)<sub>5</sub> ${}^{0}$ H<sub>6</sub>K<sub>3</sub>(H<sub>2</sub>O)<sub>14</sub>{2 $\infty$ }[P<sub>8</sub> ${}^{t}$ O<sub>20</sub>(H<sub>2</sub>O)<sub>4</sub>] R 3c... (≈Pyrophyllite) TINSLEYITE K<sup>[6]</sup>(H<sub>2</sub>O){3∞}[Al<sub>2</sub>°(P<sup>t</sup>O<sub>4</sub>)<sub>2</sub>(OH)(H<sub>2</sub>O)] P2/n... (=Leucophosphite) TORREYITE  $(Mg_1Mn)_9$ ° $Zn_4$ † $S_2$ † $[O_8(OH)_{22}(H_2O)_8]$  P2<sub>1</sub>/c (=Lawsonbaucrite) TYUYAMUNITE  $Ca(H_2O)_{5-8}\{2\infty\}[(UO_2)(V_2O_8)]$  Pnan **ÙKLONSKOVITE** Na<sup>[6]</sup>Mg<sup>[6]</sup>S<sup>t</sup>[O<sub>4</sub>(OH,F)(H<sub>2</sub>O)<sub>2</sub>] P2<sub>1</sub>/m ULEXITE Ca<sup>[9]</sup>Na<sup>0</sup>(H<sub>2</sub>O)<sub>5</sub>{g}[B<sub>3</sub><sup>t</sup>B<sub>2</sub><sup>tr</sup>O<sub>6</sub>(OH)<sub>6</sub>] P 1 URALOLITE Ca2<sup>[7]</sup>(H<sub>2</sub>O)<sub>5</sub>{2\infty}[Be<sub>4</sub><sup>t</sup>(P<sup>t</sup>O<sub>4</sub>)<sub>3</sub>(OH)<sub>3</sub>] P2<sub>1</sub>/n **USHKOVITE**  $Mg^{\circ}Fe_2^{\circ}P_2^{t}[O_8(OH)_2(H_2O)_8]$  P  $\overline{1}$  (=Laueite) VAUXITE Fe°Al₂°P₂¹[O<sub>8</sub>(OH)₂(H₂O)<sub>6</sub>] P 1 (≈Laueite)

Table 73S

### $A_pB_qC_rD_sE_x.nAq.(cont.)$

### **MINERALS TENTATIVELY CLASSIFIED (cont.)**

**VOLTAITE**  $(H_2O)_6{3\infty}[K_2^{[12]}Fe_8Al^oS_{12}^tO_{48}(H_2O)_{12}]$  Fd3c WARDITE (H<sub>2</sub>O)<sub>2</sub>(3∞)<sub>1</sub>Na<sup>[6]</sup>Al<sub>3</sub>(<sup>6]</sup>P<sub>2</sub><sup>†</sup>O<sub>8</sub>(OH)<sub>a</sub>] P4<sub>1</sub>2<sub>1</sub>2...
WELOGANITE Na<sub>2</sub>(<sup>6[6]</sup>(H<sub>2</sub>O)<sub>3</sub>(Sr,Ca)<sub>3</sub>(<sup>10]</sup>Zr<sup>[9]</sup>(g)<sub>1</sub>C<sup>tr</sup>O<sub>3</sub>]<sub>6</sub> P1
WIGHTMANITE Mg<sub>5</sub>°((OH)<sub>5</sub>(H<sub>2</sub>O)<sub>2</sub>O(g)<sub>1</sub>B<sup>tr</sup>O<sub>3</sub>])<sup>\*18</sup> L2/m XANTHOXENITE Ca<sub>4</sub>°Fe<sub>2</sub>°P<sub>4</sub>¹[O<sub>16</sub>(OH)<sub>2</sub>(H<sub>2</sub>O)<sub>3</sub>] P 1 (=Stewartite) ZINCOBOTRYOGEN (Zn,Mg,Mn)°Fe°S2<sup>t</sup>[O8(OH)(H2O)7] P2<sub>1</sub>/n (=Botryogen)

AGARDITE-(La) (Cu,Ca)<sub>6</sub>La(AsO<sub>4</sub>)<sub>3</sub>(OH)<sub>6</sub>.3H<sub>2</sub>O P6<sub>3</sub>/m

**ZINCOCOPIAPITE**  $(H_2O)_6\{1\infty\}[Zn^0Fe_3^0S_6^tO_{24}(OH)_2(H_2O)_8]$ {g}[Fe<sup>o</sup>(H<sub>2</sub>O)<sub>6</sub>] P 1 (Subs.d.Copiapite) ZINCOVOLTAITE (300)[K2 12]Fe4 Zn5 S12 O48(H2O)18] Fd3c (Subs.d.Voltaite) ZORITE Na<sub>6</sub>°Ti<sub>5</sub><sup>[5/6]</sup>(H<sub>2</sub>O)<sub>11</sub>{3∞}[Si<sub>12</sub><sup>t</sup>O<sub>34</sub>(O,OH)<sub>5</sub>] Cmmm (≈Zeolite)

### **MINERALS NOT YET CLASSIFIED**

●AGARDITE-(Y) Cu<sub>6</sub>(Y,Ca)(AsO<sub>4</sub>)<sub>3</sub>(OH)<sub>6</sub>.3H<sub>2</sub>O P6<sub>3</sub>/m AHEYLITE (Fe,Zn)Al<sub>6</sub>(PO<sub>4</sub>)<sub>4</sub>(OH)<sub>8</sub>.4H<sub>2</sub>O P 1 ALDERMANITE (Mg,Ca)<sub>5</sub>Al<sub>12</sub>(PO<sub>4</sub>)<sub>8</sub>(OH)<sub>22</sub>.32H<sub>2</sub>O Orth. s.g.? ALIETTITE Ca<sub>0.2</sub>Mg<sub>6</sub>(Si,Al)<sub>8</sub>O<sub>20</sub>(OH)<sub>4</sub>.4H<sub>2</sub>O S.? ALUMINOCOPIAPITE (AI,Mg)Fe<sub>4</sub>(SO<sub>4</sub>)<sub>6</sub>(OH,O)<sub>2</sub>.20H<sub>2</sub>O AMSTALLITE CaAl(Si,Al)4O8(OH)4.(H2O,Cl) C2/c BARBERTONITE MgCr<sub>2</sub>CO<sub>3</sub>(OH)<sub>16</sub>.4(H<sub>2</sub>O P6<sub>3</sub>/mmc BAZHENOVITE Ca<sub>8</sub>S<sub>5</sub>(S<sub>2</sub>O<sub>3</sub>)(OH)<sub>2</sub>.20H<sub>2</sub>O P2<sub>1</sub>/c **BENTORITE** Ca<sub>6</sub>(Cr,Al)<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub>(OH)<sub>12</sub>.26H<sub>2</sub>O P6<sub>3</sub>/mmc ●BUTTGENBACHITE Cu<sub>18</sub>(NO<sub>3</sub>)<sub>2</sub>(OH)<sub>32</sub>Cl<sub>3</sub>.H<sub>2</sub>O P6<sub>3</sub>/mmc CALCIOCOPIAPITE CaFe<sub>4</sub>(SO<sub>4</sub>)<sub>6</sub>(OH)<sub>2</sub>.20H<sub>2</sub>O P 1 ●CALLAGHANITE Cu<sub>2</sub>Mg<sub>2</sub>CO<sub>3</sub>(OH)<sub>6</sub>.2H<sub>2</sub>O C2/c CARBONATE-CYANOTRICHITE Cu4Al2CO3(OH)12.2H2O Orth.? s.g.? CASSEDANNEITE Pb5(VO4)2(CrO4)2.H2O A2/m... CERULÉITE Cu<sub>2</sub>Al<sub>7</sub>(AsO<sub>4</sub>)<sub>4</sub>(OH)<sub>13</sub>.12H<sub>2</sub>O P 1? CHAIDAMUITE ZnFe(SO<sub>4</sub>)<sub>2</sub>(OH).4H<sub>2</sub>O P2<sub>1</sub>/m... CHALCOALUMITE CuAl4SO4(OH)12.3H2O P21 CHALCOSIDERITE CuFe6(PO4)4(OH)8.4H2O P 1 CHAROITE (K,Na)<sub>5</sub>(Ca,Ba,Sr)<sub>8</sub>Si<sub>18</sub>O<sub>46</sub>(OH,F).nH<sub>2</sub>O Mon. CHELKARITE CaMgB<sub>2</sub>O<sub>4</sub>Cl<sub>2</sub>.7H<sub>2</sub>O? Pbca CHENEVIXITE Cu<sub>2</sub>Fe<sub>2</sub>(AsO<sub>4</sub>)<sub>2</sub>(OH)<sub>4</sub>.H<sub>2</sub>O P2<sub>1</sub>/m CHRYSOCOLLA (Cu,Al)2H2Si2O5(OH)4.nH2O? Cm? CLAIRITE (NH<sub>4</sub>)<sub>2</sub>(Fe,Mn)<sub>3</sub>(SO<sub>4</sub>)<sub>4</sub>(OH)<sub>3</sub>.3H<sub>2</sub>O P 1? CLINOTYROLITE Ca<sub>2</sub>Cu<sub>9</sub>(AsO<sub>4</sub>,SO<sub>4</sub>)<sub>4</sub>(OH,O)<sub>10</sub>.10H<sub>2</sub>O Pa... COERULEOLACTITE (Ca,Cu)Al<sub>6</sub>(PO<sub>4</sub>)<sub>4</sub>(OH)<sub>8</sub>.4-5H<sub>2</sub>O Tric. COMBLAINITE Ni<sub>6</sub>Co<sub>2</sub>CO<sub>3</sub>(OH)<sub>16</sub>.4H<sub>2</sub>O R 3m... ● CONNELITE Cu<sub>19</sub>Cl<sub>4</sub>SO<sub>4</sub>(OH)<sub>32</sub>.3H<sub>2</sub>O P 62c... CREASEYITE Cu<sub>2</sub>Pb<sub>2</sub>(Fe,Al)<sub>2</sub>Si<sub>5</sub>S<sub>17</sub>.6H<sub>2</sub>O Cmmm? CUALSTIBITE Cu<sub>6</sub>Al<sub>3</sub>(SbO<sub>4</sub>)<sub>3</sub>(OH)<sub>12</sub>.10H<sub>2</sub>O P3... ●CURITE Pb<sub>6.5</sub>(UO<sub>2</sub>)<sub>16</sub>O<sub>16</sub>(OH)<sub>12.</sub>(H<sub>2</sub>O,OH)<sub>4</sub> Pnam CYANOPHYLLITE Cu<sub>5</sub>Al<sub>2</sub>(SbO<sub>4</sub>)<sub>3</sub>(OH)<sub>2</sub>.12H<sub>2</sub>O Pmmb CYANOTRICHITE Cu4Al2SO4(OH)12.2H2O Orth. s.g.? CYRILOVITE NaFe<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub>(OH)<sub>4</sub>,2H<sub>2</sub>O P4<sub>1</sub>2<sub>1</sub>2 DELRIOITE SrCaV2O6(OH)2.3H2O 12/a.. DESAUTELSITE Mg<sub>6</sub>Mn<sub>2</sub>CO<sub>3</sub>(OH)<sub>16</sub>.4H<sub>2</sub>O R3m... EGGLETONITE Na<sub>2</sub>Mn<sub>8</sub>(Si,Al)<sub>12</sub>O<sub>29</sub>(OH)<sub>7</sub>.11H<sub>2</sub>O | 2/a ... EMBREYITE Pb5(CrO4)2(PO4)2.H2O P21m EZTLITE Pb<sub>2</sub>Fe<sub>6</sub>Te<sub>4</sub>O<sub>15</sub>(OH)<sub>10</sub>.8H<sub>2</sub>O Mon. s.g.? FAHEYITE Be<sub>2</sub>(Mn,Mg,Na)Fe<sub>2</sub><sup>3+</sup>(PO<sub>4</sub>)<sub>4</sub>.6H<sub>2</sub>O P6<sub>4</sub>22? FAHLEITE CaZn<sub>5</sub>Fe<sub>2</sub>(AsO<sub>4</sub>)<sub>6</sub>.14H<sub>2</sub>O Orth. s.g.? FAUSTITE (Zn,Cu)Al<sub>6</sub>(PO<sub>4</sub>)<sub>4</sub>.(OH)<sub>8</sub>.4H<sub>2</sub>O Tric. s.g.? FLUCKITE CaMn(AsO3OH)2.2H2O P 1 FRANCOANELLITE H<sub>6</sub>(K,Na)<sub>3</sub>(Al,Fe)<sub>5</sub>(PO<sub>4</sub>)<sub>8</sub>.13H<sub>2</sub>O R3c... FRANZINITE (Na,Ca)<sub>7</sub>(Si,Al)<sub>12</sub>O<sub>24</sub>(SO<sub>4</sub>,OH)<sub>3</sub>.H<sub>2</sub>O P 3m1...

**GANOPHYLLITE** (K,Na)<sub>6</sub>(Mn,Al,Mg)<sub>24</sub>(Si,Al)<sub>40</sub>O<sub>96</sub>(OH)<sub>16</sub>.21H<sub>2</sub>O A2/a GATUMBAITE CaAl<sub>2</sub>(PO<sub>4</sub>)<sub>2</sub>(OH)<sub>2</sub>.H<sub>2</sub>O P2/m... GLAUCOCERINITE (Zn,Cu)5Al3(SO4)1.5(OH)16.9H2O Trig. s.g.? GORMANITE (Fe,Mg)<sub>3</sub>Al<sub>4</sub>(PO<sub>4</sub>)<sub>4</sub>(OH)<sub>6</sub>.2H<sub>2</sub>O P1... GOUDEYITE Cu<sub>6</sub>(Al, Y)(AsO<sub>4</sub>)<sub>3</sub>(OH)<sub>6</sub>,3H<sub>2</sub>O P6<sub>3</sub>/m... HYDROHONESSITE Ni<sub>6</sub>Fe<sub>2</sub>SO<sub>4</sub>(OH)<sub>16</sub>.7H<sub>2</sub>O Hex. s.g.? HYDROTALCITE Mg4Al2(OH)12CO3.3H2O R 3m ILMAJOKITE (Na,Ce,Ba)<sub>10</sub>Ti<sub>5</sub>Si<sub>14</sub>O<sub>22</sub>(OH)<sub>44</sub>.nH<sub>2</sub>O Mon. s.g.? INDIGIRITE Mg<sub>2</sub>Al<sub>2</sub>(CO<sub>3</sub>)<sub>4</sub>(OH)<sub>2</sub>.15H<sub>2</sub>O S.? ●IOWAITE Mg<sub>4</sub>FeOCI(OH)<sub>8</sub>,2-4H<sub>2</sub>O R 3m IRHTEMITE Ca<sub>4</sub>MgH<sub>2</sub>(AsO<sub>4</sub>)<sub>4</sub>.4H<sub>2</sub>O Mon. s.g.? KAHLERITE Fe(UO<sub>2</sub>)<sub>2</sub>(AsO<sub>4</sub>)<sub>2</sub>.12H<sub>2</sub>O P4<sub>2</sub>/n KANEMITE HNaSi<sub>2</sub>O<sub>4</sub>(OH)<sub>2</sub>.2H<sub>2</sub>O Pnmb KEYSTONEITE H<sub>0.8</sub>Mg<sub>0.8</sub>(Ni,Fe,Mn)<sub>2</sub>(TeO<sub>3</sub>)<sub>3</sub>,5H<sub>2</sub>O P6<sub>3</sub>/m KIDWELLITE NaFe<sub>9</sub>(PO<sub>4</sub>)<sub>6</sub>(OH)<sub>10</sub>.5H<sub>2</sub>O A2/m... KITTATINNYITE Ca<sub>2</sub>Mn<sub>3</sub>Si<sub>2</sub>O<sub>8</sub>(OH)<sub>4</sub>,9H<sub>2</sub>O P6<sub>3</sub>/mmc... KLEEMANITE ZnAl2(PO4)2(OH)2.3H2O P2... KOLFANITE Ca<sub>2</sub>Fe<sub>3</sub>O<sub>2</sub>(AsO<sub>4</sub>)<sub>3</sub>.2H<sub>2</sub>O Mon. s.g.? KOMAROVITE (Ca,Mn)Nb<sub>2</sub>(Si<sub>2</sub>O<sub>7</sub>)(O,F)<sub>3</sub>.3.5H<sub>2</sub>O Orth. s.g.? **LEHNERITE** Mn(UO<sub>2</sub>)<sub>2</sub>(PO<sub>4</sub>)<sub>2</sub>.8H<sub>2</sub>O P2<sub>1</sub>/n LEIGHTONITE K2Ca2Cu(SO4)4.2H2O Fmmm LUETHEITE Cu<sub>2</sub>Al<sub>2</sub>(AsO<sub>4</sub>)<sub>2</sub>(OH)<sub>4</sub>.H<sub>2</sub>O P2<sub>1</sub>/m MANASSEITE Mg6Al2CO3(OH)16.4H2O P63/mmc MATUALAITE CaAl<sub>18</sub>(PO<sub>4</sub>)<sub>12</sub>(OH)<sub>20</sub>.28H<sub>2</sub>O P2<sub>1</sub>/c MBOBOMKULITE (Ni,Cu)Al<sub>4</sub>(NO<sub>3</sub>,SO<sub>4</sub>)<sub>2</sub>(OH)<sub>12</sub>.3H<sub>2</sub>O Mon. s.g.? METAKAHLERITE Fe(UO<sub>2</sub>)<sub>2</sub>(AsO<sub>4</sub>)<sub>2</sub>.8H<sub>2</sub>O Tet. s.g.? METAKIRCHHEIMERITE Co(UO<sub>2</sub>)<sub>2</sub>(AsO<sub>4</sub>)<sub>2</sub>.8H<sub>2</sub>O | 4/mmm METALODEVITE Zn(UO<sub>2</sub>)<sub>2</sub>(AsO<sub>4</sub>)<sub>2</sub>.10H<sub>2</sub>O P4<sub>2</sub>/m METANOVÁCEKITE Mg(UO<sub>2</sub>)<sub>2</sub>(AsO<sub>4</sub>)<sub>2</sub>.4H<sub>2</sub>O P4/n METASIDERONATRITE Na<sub>2</sub>Fe(SO<sub>4</sub>)<sub>2</sub>(OH).2H<sub>2</sub>O Pbnm... METAZELLERITE Ca(UO<sub>2</sub>)(CO<sub>3</sub>)<sub>2</sub>.3H<sub>2</sub>O Pbn2<sub>1</sub>... ●MIXITE Cu<sub>6</sub>Bi(AsO<sub>4</sub>)<sub>3</sub>(OH)<sub>6</sub>.6H<sub>2</sub>O P6<sub>3</sub>/m MONGOLITE Ca<sub>4</sub>Nb<sub>6</sub>Si<sub>5</sub>O<sub>24</sub>(OH)<sub>10</sub>.6H<sub>2</sub>O Tet. s.g.? MONSMEDITE H<sub>8</sub>K<sub>2</sub>Tl<sub>2</sub>(SO<sub>4</sub>)<sub>8</sub>.11H<sub>2</sub>O Fd3c MONTROYALITE Sr<sub>4</sub>Al<sub>8</sub>(CO<sub>3</sub>)<sub>3</sub>(OH,F)<sub>26</sub>.10H<sub>2</sub>O Tric. s.g.? **MOUNTKEITHITE**  $(Mg,Ni)_{11}(Fe,Cr)_3(SO_4,CO_3)_{3,5}(OH)_{24}.11H_2O$  Hex. s.g.? MUNDRABILLAITE (NH<sub>4</sub>)<sub>2</sub>Ca(PO<sub>3</sub>OH)<sub>2</sub>H<sub>2</sub>O Pm... NISSONITE CuMgPO<sub>4</sub>(OH).2.5H<sub>2</sub>O C2/c.. OGDENSBURGITE (Ca,Zn,Mn)<sub>4</sub>Fe<sub>6</sub>(AsO<sub>4</sub>)<sub>5</sub>(OH)<sub>11</sub>.5H<sub>2</sub>O OURSINITE (Co,Mg)(UO2)2Si2O7.6H2O Aba2.. PARAROBERTSITE Ca<sub>2</sub>Mn<sub>3</sub>(PO<sub>4</sub>)<sub>3</sub>O<sub>2</sub>.3H<sub>2</sub>O P2<sub>1</sub>/c PARSONSITE Pb2(UO2)(PO4)2.0-2H2O P 1 PETERSITE - (Y) Cu<sub>6</sub>(Y,Ca)(PO<sub>4</sub>)<sub>3</sub>(OH)<sub>6</sub>.3H<sub>2</sub>O P6<sub>3</sub>/m...

Table 74S

## $A_pB_qC_rD_sE_x.nAq.(cont.)$

#### **MINERALS NOT YET CLASSIFIED (cont.)**

PHYLLOTUNGSTITE HCaFe<sub>3</sub>(WO<sub>4</sub>)<sub>6</sub>.10H<sub>2</sub>O P222... PROTASITE Ba(UO<sub>2</sub>)<sub>3</sub>O<sub>3</sub>(OH)<sub>2</sub>.3H<sub>2</sub>O Pn RAMEAUITE K2CaO8(UO2)6.9H2O C2/c RIVADAVITE Na<sub>6</sub>Mg(B<sub>6</sub>O<sub>7</sub>(OH)<sub>6</sub>)<sub>4</sub>.10H<sub>2</sub>O P2<sub>1</sub>/m ● RUIZITE Ca<sub>2</sub>Mn<sub>2</sub>Si<sub>4</sub>O<sub>11</sub>(OH)<sub>4</sub>.2H<sub>2</sub>O C2/m SANTAFEITE (Ca,Sr,Na)<sub>3</sub>(Mn,Mg,Al,Fe)<sub>4</sub>(VO<sub>4</sub>)<sub>4</sub>(OH)<sub>5</sub>.2H<sub>2</sub>O **SAYRITE** Pb<sub>2</sub>(UO<sub>2</sub>)<sub>5</sub>O<sub>6</sub>(OH)<sub>2</sub>.4H<sub>2</sub>O P2<sub>1</sub>/c SCHODERITE Al<sub>2</sub>(PO<sub>4</sub>)(VO<sub>4</sub>).8H<sub>2</sub>O P2/m? SHABYNITE Mg<sub>5</sub>BO<sub>3</sub>(OH)<sub>5</sub>(Cl,OH)<sub>2</sub>.4H<sub>2</sub>O Mon. s.g.? **OSHIGAITE** Mn<sub>7</sub>Al<sub>4</sub>(SO<sub>4</sub>)<sub>2</sub>(OH)<sub>22</sub>.8H<sub>2</sub>O R 3 SIDERONATRITE Na<sub>2</sub>Fe(SO<sub>4</sub>)<sub>2</sub>(OH).3H<sub>2</sub>O Pbnm **SIELECKIITE** Cu<sub>3</sub>Al<sub>4</sub>(PO<sub>4</sub>)<sub>2</sub>(OH)<sub>12</sub>.2H<sub>2</sub>O P 1 ... SODIUM PHARMACOSIDERITE  $(Na,K)_2Fe_4(AsO_4)_3(OH)_5.7H_2O P \bar{4}3m$ SODIUM-URANOSPINITE (Na2, Ca)(UO2)2(AsO4)2.5H2O P4/nmm **SOUZALITE** (Mg,Fe)<sub>3</sub>(Al,Fe)<sub>4</sub>(PO<sub>4</sub>)<sub>4</sub>(OH)<sub>6</sub>.2H<sub>2</sub>O A2/m SPHENISCIDITE (NH<sub>4</sub>,K)(Fe,AI)<sub>2</sub>(PO<sub>4</sub>)<sub>2</sub>(OH).2H<sub>2</sub>O P2<sub>1</sub>/n STRELKINITE Na<sub>2</sub>(UO<sub>2</sub>)<sub>2</sub>(VO<sub>4</sub>)<sub>2</sub>.6H<sub>2</sub>O Pnmm...

TAKOVITE Ni<sub>6</sub> Al<sub>2</sub>CO<sub>3</sub>(OH)<sub>16</sub>.4H<sub>2</sub>O Trig. s.g.? TERSKITE Na<sub>4</sub>ZrSi<sub>6</sub>O<sub>15</sub>(OH)<sub>2</sub>.H<sub>2</sub>O Pnc2 THORBASTNÄSITE Th(Ca,Ce)(CO<sub>3</sub>)<sub>2</sub>F<sub>2</sub>.3H<sub>2</sub>O P 62c TOSUDITE Na<sub>0.5</sub>(AI,Mg)<sub>6</sub>(Si,AI)<sub>8</sub>O<sub>18</sub>(OH)<sub>12</sub>.5H<sub>2</sub>O Orth. s.g.? TUPERSSUATSIAITE NaFe3Si8O20(OH)2.5H2O C2/m URAMPHITE NH<sub>4</sub>(UO<sub>2</sub>)(PO<sub>4</sub>).3H<sub>2</sub>O Tet. s.g.? URANOPILITE (UO2)6SO4(OH)10.12H2O Mon. s.g.? VERTUMNITE Ca<sub>4</sub>Al<sub>4</sub>Si<sub>4</sub>O<sub>6</sub>(OH)<sub>24</sub>.3H<sub>2</sub>O P2<sub>1</sub>/m WALLKILLDELLITE Ca<sub>4</sub>Mn<sub>6</sub>(AsO<sub>4</sub>)<sub>4</sub>(OH)<sub>8</sub>.18H<sub>2</sub>O WEEKSITE K<sub>2</sub>(UO<sub>2</sub>)<sub>2</sub>Si<sub>6</sub>O<sub>15</sub>.4H<sub>2</sub>O Pnnb WILCOXITE MgAI(SO<sub>4</sub>)<sub>2</sub>F.18H<sub>2</sub>O P 1... YAKHONTOVITE (Ca,Na,K)<sub>0.2</sub>(Cu,Fe,Mg)<sub>2</sub>Si<sub>4</sub>O<sub>10</sub>(OH)<sub>2</sub>.3H<sub>2</sub>O Mon. s.g.? ZAKHAROVITE Na<sub>4</sub>Mn<sub>5</sub>Si<sub>10</sub>O<sub>24</sub>(OH)<sub>6</sub>.6H<sub>2</sub>O P31m... ZAPATALITE Cu<sub>3</sub>Al<sub>4</sub>(PO<sub>4</sub>)<sub>3</sub>(OH)<sub>9</sub>.H<sub>2</sub>O Tet. s.g.? ZELLERITE Ca(UO<sub>2</sub>)(CO<sub>3</sub>)<sub>2</sub>.5H<sub>2</sub>O Pmn2<sub>1</sub>... **●ZEOPHYLLITE** Ca<sub>13</sub>Si<sub>10</sub>O<sub>28</sub>(OH)<sub>2</sub>F<sub>8</sub>6H<sub>2</sub>O R 3... **ZINC-ZIPPEITE**  $Zn_2(UO_2)_6(SO_4)_3(OH)_{10}.16H_2O$  Orth.? s.g.?

## $A_pB_qC_rD_sE_xF_y.nAq.$

#### SHEET

TRONA  $2\infty[Na_3^{olp}H(H_2O)_2\{g\}[C^{ti}O_3]_2]$  C2/c URANOPHANE  $Ca^{[8]}(H_2O)_5H_2\{2\infty]\{(U^{[2+5]}O_2)_2(S^{ti}O_4)_2]$  P2<sub>1</sub>

### MINERALS TENTATIVELY CLASSIFIED

**ARDEALITE**  $Ca_2^oP^tS^t[HO_8(H_2O)_4]$  Cc. ( $\approx$ Gypsum) **ATTAKOLITE**  $\{3\infty\}[(Ca,Mn,Fe)_3^{[8]}Al_6^{[6]}P_5^tS_2^tO_{28}(H_2O)_3]$ C2/m **BETA-URANOPHANE**  $Ca(H_2O)_5H_2\{2\infty\}[(UO_2)_2(Si^tO_4)_2]$ **CACOXENITE**  $(H_2O)_{75}[3\infty][Fe_{24}{}^{\circ}Al^{[5by]}O_6(P^tO_4)_{17}(OH)_{12}]$  $\begin{array}{lll} \textbf{CETINEITE} & (H_2O)_2\{3\omega\}[K_{3.5}^{\circ}(Sb_2^{[3n]}O_3)_3Sb^{[3n]}S_3(OH)_{0.5}] & P6_3\\ \textbf{CHIAVENNITE} & & Cal^{[8]}Mn^{[6]}(H_2O)_2\{3\omega\}[Si_5^{\dagger}Be_2^{\dagger}(OH)_2] & Pnab \end{array}$ **CHUKHROVITE - (Y)**  $(H_2O)_{10}{3\infty}[Ca_3^{\circ}(Y,Ce)^{\circ}Al_2^{\circ}S^{I}O_4F_{13}]$ Fd3 **CREEDITE**  $(H_2O)_2\{3\infty\}[Ca_3^{[8]}Al_2^{\circ}S^t[O_4(OH)_2F_8]$  C2/c **CUPROSKLODOWSKITE**  $(H_2O)_6Cu^{[7by]}H_2\{2\infty\}[(UO_2)_2(Si^tO_4)_2] P \bar{1}$ DELHAYELITE (H<sub>2</sub>O)<sub>18</sub>(Na,K)<sub>10</sub><sup>[8]</sup>(3∞)[Ca<sub>5</sub><sup>[6]</sup>Al<sub>6</sub><sup>t</sup>Si<sub>32</sub><sup>t</sup>O<sub>80</sub>Cl<sub>6</sub>] Pmn2<sub>1</sub> ... (≈Macdonaldite) **DEWINDTITE** Pb<sub>2</sub><sup>[8]</sup>(H<sub>2</sub>O)<sub>7</sub>{2∞}[(U<sup>[7by/8by]</sup>O<sub>2</sub>)<sub>4</sub>(OH)<sub>3</sub>(P<sup>t</sup>O<sub>4</sub>)<sub>3</sub>] **DUMONTITE** Pb<sub>2</sub>(H<sub>2</sub>O)<sub>5</sub>{2 $\infty$ }[(UO<sub>2</sub>)<sub>3</sub>O<sub>2</sub>(P<sup>t</sup>O<sub>4</sub>)<sub>2</sub>]( $\approx$ Dewindtite) **EAKERITE**  $Ca_2^{[8]}Sn^{[6]}(H_2O)_2 \{2\infty\}[Al^tSi_3{}^tO_9(OH)]_2 P2_1/m$ (≈Ussingite) **FAUJASITE** Na<sub>20</sub>Ca<sub>12</sub>Mg<sub>8</sub>(H<sub>2</sub>O)<sub>235</sub>{ $3\infty$ }[(Al<sub>60</sub>Si<sub>132</sub>)<sup>t</sup>O<sub>384</sub>] Fd3m (≈Sodalite,Zeolite) **FERRARISITE**  $(H_2O)_9Ca_4^{0}\{2\infty\}[Ca^{[7]}As_4^{t}O_{14}(OH)_2] P \bar{1}$ FERRIERITE (monoclinic) KNa<sub>3</sub>Mg<sup>o</sup>(H<sub>2</sub>O)<sub>18</sub>  $\{3\infty\}[(Al_5Si_{31})^tO_{72}]$  P2<sub>1</sub>/n ( $\approx$ Mordenite,Zeolite) GEIGERITE Mn5°As4<sup>t</sup> [O14(OH)2(H2O)10] P 1 (≈Chudobaite) GRISCHUNITE (H<sub>2</sub>O)<sub>2</sub>Ca<sub>2</sub><sup>[8]</sup>{3∞}[Na<sup>o</sup>Mn<sub>5</sub><sup>o</sup>Fe<sup>o</sup>As<sub>6</sub><sup>t</sup>O<sub>24</sub>] Pcab

(≈Ferrarisite) **GUILLEMINITE**  $(H_2O)_3Ba^{[10]}\{2\infty\}[U_3^{[7/8]}(Se^{tr}O_3)_2O_8]$  P2<sub>1</sub>nm (≈Phosphuranylite) GYROLITE {2\infty}[Na\cappa Ca\_{16}\cappa (H\_2O)\_{14}]{2\infty}[Al\tangle Si\_{24}\tangle O\_{60}(OH)\_8] P 1 (≈Reyerite) HURÉAULITE Mn5°P4<sup>t</sup>[O14(OH)2(H2O)4] C2/c **KAINOSITE** – **(Y)**  $(H_2O){3\infty}[Ca_2^{[8]}(Y,Ce)_2^{[8]}[g][Si_4^tO_{12}]C^{tr}O_3]$ **KALIBORITE**  $(H_2O)_4[5\infty][K^{[8]}Mg_2^o[B_2^{\dagger}B_4^{\dagger t}O_8(OH)_5]_2]$  C2/c **KRIBERGITE**  $AI_5^oP_3^{\dagger}S^{\dagger}[O_{16}(OH)_4(H_2O)_4]$  Tric.s.g.? (≈Hotsonite) LEIFITE Na<sub>6</sub><sup>[7]</sup>(OH)<sub>2</sub>(H<sub>2</sub>O)<sub>1.5</sub> {3∞}[Be<sub>2</sub><sup>t</sup>Si<sub>16</sub><sup>t</sup>Al<sub>2</sub>O<sub>39</sub>] P 3m1 LUN'OKITE (Mg,Fe)°(Mn,Ca)°Al°P<sub>2</sub>¹[O<sub>8</sub>(OH)(H<sub>2</sub>O)<sub>4</sub>] Pbca (=Segelente) METAVOLTINE (H<sub>2</sub>O)<sub>18</sub>{3\infty}[K<sub>2</sub><sup>[9]</sup>Na<sub>6</sub>°Fe<sub>7</sub>°S<sub>12</sub><sup>t</sup>O<sub>50</sub>] P3 MONTGOMERYITE (H<sub>2</sub>O)<sub>12</sub>Ca<sub>4</sub><sup>[8]</sup>{1∞}[Mg°Al<sub>4</sub>°P<sub>6</sub>¹O<sub>24</sub>(OH)<sub>4</sub>] C2/c (=Calcioferrite,=Zodacite) **MORDENITE**  $K_{2.8}Na_{1.5}Ca_2(H_2O)_{29} \{3\infty\}[Al_9{}^tSi_{39}{}^tO_{96}]$  Cmc2<sub>1</sub> NOSEAN Na<sub>8</sub>S<sup>t</sup>O<sub>4</sub>(H<sub>2</sub>O){3 $\infty$ }[Si<sub>6</sub><sup>t</sup>Al<sub>6</sub><sup>t</sup>O<sub>24</sub>] P  $\overline{4}$ 3n ( $\approx$ Sodalite) **OFFRÉTITE**  $K^{[8]}Ca^{[6]}Mg^{t}(H_{2}O)_{15}\{3\infty\}[Al_{5}{}^{t}Si_{13}{}^{t}O_{36}]$  P 6m2 (Zeolite) **OLMSTEADITE** (H<sub>2</sub>O)<sub>2</sub>K<sup>[8]</sup>{3∞}[Fe<sub>2</sub>°(Nb,Ta)°P<sub>2</sub><sup>t</sup>O<sub>10</sub>] Pb2<sub>1</sub>m (≈Montgomeryite) OVERITE Ca°(H<sub>2</sub>O)<sub>4</sub>(2∞)[Mg°Al°P<sub>2</sub><sup>t</sup>O<sub>8</sub>(OH)] Pbca (=Segelerite) PERETAITE {2\infty} Sb2 tO4(OH)2 {1\infty} Ca8ap S2 tO8(H2O)2 C2/c

GUERINITE (H<sub>2</sub>O)<sub>9</sub>Ca<sub>4</sub>°{2∞}[Ca<sup>[7]</sup>As<sub>4</sub><sup>t</sup>O<sub>14</sub>(OH)<sub>2</sub>] P2<sub>1</sub>/n

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## $A_pB_qC_rD_sE_xF_y.nAq.(cont.)$

#### **MINERALS TENTATIVELY CLASSIFIED (cont.)**

PHOSPHURANYLITE Ca(H<sub>2</sub>O)<sub>6</sub>(2∞){(UO<sub>2</sub>)<sub>3</sub>(OH)<sub>2</sub>(P<sup>t</sup>O<sub>4</sub>)<sub>2</sub>] Cmcm (≈Dumontite) PHURALUMITE Al<sub>2</sub>°(OH)<sub>4</sub>(H<sub>2</sub>O)<sub>10</sub>{2∞}{(P<sup>t</sup>O<sub>4</sub>)<sub>2</sub>(UO<sub>2</sub>)<sub>3</sub>(OH)<sub>2</sub>] P2<sub>1</sub>/a

**PHURCALITE**  $Ca_2^{[7]}(OH)_2(H_2O)_4\{2\infty\}[(P^tO_4)_2(UO_2)_3(OH)_2]$ 

Pbca (≈Phuralumite)

p-VEATCHITE

 $(Sr,Ca)_2^{[10/11]}B(H_2O)(OH)_3\{2\infty\}[B_2^{t}B_3^{tr}O_8(OH)]_2$  P2<sub>1</sub>

REYERITE

 $\begin{array}{ll} \text{(Na,K)}_2\text{Ca}_{14}^{\text{o}}\text{(OH)}_8\text{(H}_2\text{O)}_6\text{\{}2\infty\text{)}\text{[Si}_1^{\text{t}}\text{Al}_2^{\text{t}}\text{O}_{38\text{)}}\text{\{}2\infty\text{)}\text{[Si}_8^{\text{t}}\text{O}_{20\text{)}}. & P \ \overline{3} \\ \textbf{SABUGALITE} & \text{(H}_2\text{O)}_{16\text{[HAI }}\text{\{}2\infty\text{)}\text{[UO}_2\text{PO}_4\text{]}_4\text{]} & \text{I 4/mmm} \\ \text{($\approx$Autunite)} \end{array}$ 

SAINFELDITE  $Ca_5^{\circ}As_4^{\ t}[O_{14}(OH)_2(H_2O)_4]$  C2/c ( $\approx$ Villyaellenite)

SCHOONERITE  $(H_2O)_9Zn^{[5]}\{2\infty\}\{Mn^oFe_3^oP_3^tO_{12}\}$  Pmab SEGELERITE  $Ca^o(H_2O)_4\{2\infty\}\{Mg^oFe^oP_2^tO_8(OH)\}$  Pbca  $(=O)_4(te_1)$ 

SENGIEŔITE Cu2°(OH)2(H2O)6{2∞}[(UO2)2V2O8] P2₁/A SINKANKASITE {2∞}[Mn°(H2O)6 {1∞}[Al°(P¹O3OH)2(OH)]] P 1

**SLAVÍKITE**  $Na^{[3]}Mg_2^{\circ}(H_2O)_{33}\{2\infty\}[Fe_5^{\circ}S_7^{\dagger}O_{28}(OH)_6]$  R  $\bar{3}$ 

 $\begin{array}{l} \textbf{SWARTZITE} \quad \textbf{Mg}^{o}\text{Ca}^{[8ap]}(H_{2}\text{O})_{12}[\textbf{U}^{[6p3c]}\text{O}_{2}\{g\}[\textbf{C}^{tr}\text{O}_{3}]_{3}] \quad P2_{1}/m \\ \textbf{SYNADELPHITE} \quad (\textbf{Mn},\textbf{Mg},\textbf{Ca})_{9}^{o}\textbf{As}_{2}^{o}\textbf{As}^{[5y]}[\textbf{O}_{11}(\textbf{OH})_{9}(H_{2}\textbf{O})_{2}]^{ch} \\ \textbf{Pnma} \end{array}$ 

**TERUGGITE**  $Mg^{o}(H_{2}O)_{6}\{3\infty\}[Ca_{4}{}^{BI}(As^{t}B_{6}{}^{thr}O_{11}(OH)_{6})_{2}(H_{2}O)_{8}]$  P2<sub>1</sub>/a

**THREADGOLDITE**  $(H_2O)_8(OH)[AI^{[6]}\{2\infty\}[U^{[2+4]}O_2P^{1}O_4]_2]$  Cc ( $\approx$ Autunite)

**TIPTOPITE** (Li,Na,Ca)<sub>6</sub>K<sub>2</sub>(H<sub>2</sub>O)<sub>1·3</sub>(OH)<sub>2</sub>{ $3\infty$ }[Be<sub>6</sub><sup>t</sup>P<sub>6</sub><sup>t</sup>O<sub>24</sub>] P6<sub>3</sub> ( $\approx$ Cancrinite,Zeolite)

**TRÖGERITE**  $U_2^{\circ}As_2^{t}[O_{12}(H_2O)_6(H_3O)_2]$  **P4/nmm VANMEERSSCHEITE**  $(H_2O)_4(OH)_4U\{2\infty\}[(U^{[2+5]}O_2)]_3(P^tO_4)_2$   $(OH)_2]$  **P2**<sub>1</sub>/mn

VEATCHITE S<sub>I2</sub><sup>110/11]</sup>B<sup>tr</sup>(OH)<sub>3</sub>(2∞}[B<sub>2</sub><sup>t</sup>B<sub>3</sub><sup>tr</sup>O<sub>8</sub>(OH)]<sub>2</sub> Aa VILLYAELLENITE (Mn,Ca,Zn)<sub>5</sub> As<sub>4</sub> [O<sub>14</sub>(OH)<sub>2</sub>(H<sub>2</sub>O)<sub>4</sub>] Cc ... (≈Sainfeldite)

VISHNEVITÉ (Na,K,Ca) $_8$ (SO $_4$ )(H $_2$ O) $_2$ {3 $\infty$ }[Si $_6$ <sup>t</sup>Al $_6$ <sup>t</sup>O $_2$ 4] P6 $_3$ 2 ... ( $\approx$ Cancrinite,Zeolite)

WERMLANDITE Ca<sup>o</sup>Mg<sub>7</sub><sup>o</sup>(Al,Fe)<sup>o</sup>S<sub>2</sub><sup>t</sup>[O<sub>8</sub>(OH)<sub>18</sub>(H<sub>2</sub>O)<sub>12</sub>] P 3c1 (≈Hydrocalumite)

**ZODACITE**  $(H_2O)_{12}Ca_4^{[8]}\{1\infty\}$  [Mn°Fe<sub>4</sub>°P<sub>6</sub>†O<sub>24</sub>(OH)<sub>4</sub>] C2/c ... (=Montgomeryite)

#### **MINERALS NOT YET CLASSIFIED**

AJOITE (K,Na)Cu<sub>7</sub>AlSi<sub>9</sub>O<sub>24</sub>(OH)<sub>6</sub>.3H2O P1 ... ANDERSONITE Na<sub>2</sub>Ca(UO<sub>2</sub>)(CO<sub>3</sub>)<sub>3</sub>.6H<sub>2</sub>O R  $\overline{3}$ m ARSENURANOSPATHITE HAI(UO<sub>2</sub>)<sub>4</sub>(AsO<sub>4</sub>)<sub>4</sub>.40H<sub>2</sub>O P4<sub>2</sub>/n ARSENURANYLITE Ca(UO<sub>2</sub>)<sub>4</sub>(AsO<sub>4</sub>)<sub>2</sub>(OH)<sub>4</sub>.6H<sub>2</sub>O Bmmb ...

BANNISTERITE KCaMn<sub>21</sub>(Si,Al)<sub>32</sub>O<sub>76</sub>(OH)<sub>16</sub>.12H<sub>2</sub>O A2/a BARIO-ORTHOJOAQUINITE (Ba,Sr)<sub>4</sub>Fe<sub>2</sub>Ti<sub>2</sub>O<sub>2</sub>(SiO<sub>3</sub>)<sub>8</sub>.H<sub>2</sub>O Ccmm ...

**BERGENITE** (Ba,Ca)<sub>2</sub>(UO<sub>2</sub>)<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub>(OH)<sub>4</sub>.5.5H<sub>2</sub>O P2<sub>1</sub>/c **BETPAKDALITE** (H,K)<sub>6</sub>Ca<sub>4</sub>Fe<sub>6</sub>As<sub>4</sub>Mo<sub>16</sub>O<sub>74</sub>.28H<sub>2</sub>O C2/m **BIJVOETITE** - **(Y)** (Y,Dy)<sub>2</sub>(UO<sub>2</sub>)<sub>4</sub>(CO<sub>3</sub>)<sub>4</sub>(OH)<sub>6</sub>.11H<sub>2</sub>O C2ma ...

**BUKOVSKÝ**ITE  $Fe_2(AsO_4)(SO_4)(OH).7H_2O$  P  $\overline{1}$  ... **BURANGAITE**  $(Na_1Ca)_2Fe_2AI_{10}(PO_4)_8(O,OH)_{12}.4H_2O$  C2/c **CALCIOFERRITE**  $Ca_4Mg(Fe,AI)_4(PO_4)_6(OH)_4.13H_2O$  ? C2/c?

**CALCURMOLITE** Ca(UO<sub>2</sub>)<sub>3</sub>(MoO<sub>4</sub>)<sub>3</sub>(OH)<sub>2</sub>.11H<sub>2</sub>O S.? **CANAVESITE** Mg<sub>2</sub>(HBO<sub>3</sub>)(CO<sub>3</sub>).5H<sub>2</sub>O P2/m **CARBOBORITE** Ca<sub>2</sub>Mg(B(OH)<sub>4</sub>)<sub>2</sub>(CO<sub>3</sub>)<sub>2</sub>.4H<sub>2</sub>O P2<sub>1</sub>/m **CHERNIKOVITE** (H<sub>3</sub>O)(UO<sub>2</sub>)PO<sub>4</sub>.3H<sub>2</sub>O P4/nmm? **CHUDOBAITE** (Mg,Zn)<sub>5</sub>(ASO<sub>4</sub>)<sub>2</sub>(ASO<sub>3</sub>OH)<sub>2</sub>.10H<sub>2</sub>O P  $\bar{1}$  **CLINOUNGEMACHITE** K<sub>3</sub>Na<sub>9</sub>Fe(SO<sub>4</sub>)<sub>6</sub>(OH)<sub>3</sub>.9H<sub>2</sub>O Mon.s.g.?

COBALT- ZIPPEITE  $Co(UO_2)_6(SO_4)_3(OH)_{10}F_8.16H_2O$  S.? DIADOCHITE  $Fe_2(PO_4)(SO_4)(OH).5H_2O$  P1 ... DONNAYITE - (Y) NaSr<sub>3</sub>CaY(CO<sub>3</sub>)<sub>6.</sub>3H<sub>2</sub>O P Ī DUHAMELITE  $Cu_4Pb_2Bi(VO_4)_4(OH)_3.8H_2O$  Orth.s.g.? EPISTOLITE  $Na_5TiNb_2(Si_2O_7)_2(O,F)_4.5H_2O$  P1 FURONGITE  $Al_{13}(UO_2)_7(PO_4)_{13}(OH)_{14}.58H_2O$  P1 ... GRIMSELITE  $K_3Na(UO_2)(CO_3)_3.H_2O$  P  $\bar{6}2c$  HOTSONITE  $Al_{11}(SO_4)_3(PO_4)_2(OH)_{21}.16H_2O$  Tric.s.g.? HÜGELITE  $Pb_2(UO_2)_3(ASO_4)_2(OH)_4.3H_2O$  Mon.s.g.? HYDRODELHAYELITE  $KCa_2(Si_7AI)O_{17}(OH)_2.6H_2O$  Pnm2<sub>1</sub>

JOHANNITE Cu(UO2)2(SO4)2(OH)2.8H2O P1

JOHNWALKITE K(Mn,Fe)<sub>2</sub>(Nb,Ta)O<sub>2</sub>(PO<sub>4</sub>)<sub>2</sub>.2(H<sub>2</sub>O,OH) Ph2<sub>4</sub>m

JONESITE  $(K,Na)_2Ba_4Ti_4Al_2Si_{10}O_{36}.6H_2O$  B22<sub>1</sub>2 JUNGITE  $Ca_2Zn_4Fe_8(PO_4)_9(OH)_9.16H_2O$  Pcmm ... KAMOTOITE – (Y)  $Y_2O_4(UO_2)_4(CO_3)_3.14H_2O$  P2<sub>1</sub>/n KECKITE  $(Ca_1Mg)(Mn,Zn)_2Fe_3(PO_4)_4(OH)_3.2H_2O$  P2<sub>1</sub>/a KINGSMOUNTITE  $(Ca_1Mn)_4FeAl_4(PO_4)_6(OH)_4.12H_2O$  C2 LAPLANDITE - (Ce)  $Na_4CeTiPSi_7O_{22}.5H_2O$  Pmmm LAVENDULAN NaCaCu<sub>5</sub>(ASO\_4)\_4C1.5H\_2O Orth.s.g.? LOUDOUNITE  $NaCa_5Zr_4Si_{16}O_{40}(OH)_{11}.8H_2O$  S.? MAGNESIUM-ZIPPEITE  $Mg_2(UO_2)(SO_4)_3(OH)_{10}.16H_2O$  S.? MARTHOZITE  $Cu_1(UO_2)_3(SeO_3)_3(OH)_2.7H_2O$  Pnma ... MCKELVEYITE - (Y)  $NaBa_3(Ca_1U)^4(CO_3)_6.3H_2O$  P $\frac{1}{3}$  METAVANMEERSSCHEITE  $U_1(UO_2)_3(PO_4)_2(CO_3)_6.2H_2O$ 

 $\begin{array}{lll} (\text{Mg}_6\text{Al}_3(\text{OH})_{18})(\text{Na}_{0.6}(\text{SO}_4,\text{CO}_3)_2).12\text{H}_2\text{O} & R \ \bar{3}\text{m} \\ \text{MUNDITE} & \text{Al}(\text{UO}_2)_3(\text{PO}_4)_2(\text{OH})_3.5.5\text{H}_2\text{O} & \text{P2}_1\text{cn} \dots \\ \text{NAKAURITE} & \text{Cu}_8(\text{SO}_4)_4(\text{CO}_3)(\text{OH})_6.48\text{H}_2\text{O} & \text{Orth.s.g.?} \\ \text{NICKEL-ZIPPEITE} & \text{Ni}_2(\text{UO}_2)_6(\text{SO}_4)_3(\text{OH})_{10}.16\text{H}_2\text{O} & \text{S.?} \\ \text{OBOYERITE} & \text{H}_6\text{Pb}_6(\text{TeO}_3)_3(\text{TeO}_6)_2.2\text{H}_2\text{O} & \text{P} \ \bar{1} \dots \\ \text{PARNAUITE} & \text{Cu}_9(\text{ASO}_4)_2(\text{SO}_4)(\text{OH})_{10}.7\text{H}_2\text{O} & \text{P2}_122 \\ \text{PERLIALITE} & \text{K}_9\text{Na}(\text{CaSr})(\text{Al}_{12}\text{Si}_{24})\text{O}_{72}.15\text{H}_2\text{O} & \text{P6/mmm} \\ \text{PHOSPHOFIBRITE} & \text{KCuFe}_{15}(\text{PO}_4)_{12}(\text{OH})_{12}.12\text{H}_2\text{O} \\ \end{array}$ 

PSEUDOBOLÉITE 28PbCl<sub>2</sub>.2AgCl.24Cu(OH)<sub>2</sub>.14H<sub>2</sub>O(?) I 4/mmm

RANKACHITE CaFeV<sub>4</sub>O<sub>4</sub>(WO<sub>4</sub>)<sub>8</sub>.12H<sub>2</sub>O Pmmm RENARDITE Pb(UO<sub>2</sub>)<sub>4</sub>(PO<sub>4</sub>)<sub>2</sub>(OH)<sub>4</sub>.7H<sub>2</sub>O Bmmb Table 76S

### $A_pB_qC_rD_sE_xF_y.nAq.(cont.)$

### **MINERALS NOT YET CLASSIFIED (cont.)**

SAKHAITE Ca<sub>3</sub>Mg(BO<sub>3</sub>)<sub>2</sub>(CO<sub>3</sub>).nH<sub>2</sub>O Fd3m SAMPLEITE NaCaCu<sub>5</sub>(PO<sub>4</sub>)<sub>4</sub>CI.5H<sub>2</sub>O 2/m ... SANJUANITE Al<sub>2</sub>(PO<sub>4</sub>)(SO<sub>4</sub>)(OH).9H<sub>2</sub>O Tric.s.g.? SARMIENTITE Fe<sub>2</sub>(AsO<sub>4</sub>)(SO<sub>4</sub>)(OH).5H<sub>2</sub>O P2<sub>1</sub>/c SATIMOLITE KNa<sub>2</sub>Al<sub>4</sub>(B<sub>2</sub>O<sub>5</sub>)<sub>3</sub>Cl<sub>3</sub>.13H<sub>2</sub>O Orth.s.g.? SCHUILINGITE - (Nd) CuPb(Nd,Gd,Sm,Y)(CO<sub>3</sub>)<sub>3</sub>(OH).1.5H<sub>2</sub>O P2<sub>1</sub>cn SHARPITE Ca(UO<sub>2</sub>)<sub>6</sub>(CO<sub>3</sub>)<sub>5</sub>(OH)<sub>4</sub>.6H<sub>2</sub>O Orth.s.g.? **SODIUM - ZIPPEITE** Na<sub>4</sub>(UO<sub>2</sub>)<sub>6</sub>(SO<sub>4</sub>)<sub>3</sub>(OH)<sub>10</sub>.4H<sub>2</sub>O Orth.s.g.? SPANGOLITE CueAISO4(OH)12CI.3H2O P3c1 SVEITE KAI7(NO3)4(OH)16CI2.8H2O Mon.s.g.? **SWAMBOITE** H<sub>6</sub>U(UO<sub>2</sub>)<sub>6</sub>(SiO<sub>4</sub>)<sub>6</sub>.30H<sub>2</sub>O P2<sub>1</sub>/a TENGCHONGITE Ca(UO<sub>2</sub>)<sub>6</sub>(MoO<sub>4</sub>)<sub>2</sub>O<sub>5</sub>.12H<sub>2</sub>O A2<sub>1</sub>22 TISINALITE H<sub>3</sub>Na<sub>3</sub>(Mn,Ca,Fe)TiSi<sub>6</sub>(O,OH)<sub>18</sub>.2H<sub>2</sub>O R 3m TLALOCITE Cu<sub>10</sub>Zn<sub>6</sub>Te<sub>3</sub>O<sub>11</sub>Cl(OH)<sub>25</sub>.27H<sub>2</sub>O Orth.s.g.? TRASKITE Ba<sub>12</sub>Fe<sub>2</sub>Ti<sub>6</sub>Si<sub>12</sub>O<sub>54</sub>Cl<sub>3</sub>.7H<sub>2</sub>O P 6m2

ULRICHITE CaCu(UO2)(PO4)2.4H2O C2/m URANCALCARITE Ca(UO2)3CO3(OH)6.H2O Pbnm ... URANOSPATHITE HAI(UO2)4(PO4)4.40H2O P42/n URANOTUNGSTITE (Fe,Ba,Pb)(UO2)2WO4(OH)4.12H2O P2221 ... URSILITE (Mg,Ca)<sub>4</sub>(UO<sub>2</sub>)<sub>4</sub>(Si<sub>2</sub>O<sub>5</sub>)<sub>5.5</sub>(OH)<sub>5.</sub>13H<sub>2</sub>O Orth.s.g.? VANURALITE AI(UO2)2(VO4)2(OH).11H2O A2/a VEATCHITE - A Sr<sub>2</sub>(B<sub>5</sub>O<sub>8</sub>(OH))<sub>2</sub>B(OH)<sub>3</sub>.H<sub>2</sub>O A1 ... VLADIMIRITE Ca<sub>5</sub>(AsO<sub>4</sub>)<sub>2</sub>(AsO<sub>3</sub>OH)<sub>2</sub>.5H<sub>2</sub>O P2<sub>1</sub>/c VOGLITE Ca<sub>2</sub>Cu(UO<sub>2</sub>)(CO<sub>3</sub>)<sub>4</sub>.6H<sub>2</sub>O P2<sub>1</sub>... WALPURGITE Bi<sub>4</sub>O<sub>4</sub>(UO<sub>2</sub>)(AsO<sub>4</sub>)<sub>2</sub>.2H<sub>2</sub>O P 1 WILHELMVIERLINGITE CaMnFe(PO<sub>4</sub>)<sub>2</sub>(OH).2H<sub>2</sub>O Pbca YUKSPORITE (K,Ba)NaCa<sub>2</sub>(Si,Ti)<sub>4</sub>O<sub>11</sub>(F,OH).H<sub>2</sub>O Orth.s.g.? ■ZIPPEITE K<sub>4</sub>(UO<sub>2</sub>)<sub>6</sub>(SO<sub>4</sub>)<sub>3</sub>(OH)<sub>10</sub>.4H<sub>2</sub>O C2/c ZYKAITE Fe<sub>4</sub>(AsO<sub>4</sub>)<sub>3</sub>SO<sub>4</sub>(OH).15H<sub>2</sub>O Orth.s.g.?

TRIANGULITE Al<sub>3</sub>(UO<sub>2</sub>)<sub>4</sub>(PO<sub>4</sub>)<sub>4</sub>(OH)<sub>5</sub>.5H<sub>2</sub>O P1

## $A_pB_qC_rD_sE_xF_vG_z.nAq.$

#### **MINERALS TENTATIVELY CLASSIFIED**

BAKERITE Ca<sub>4</sub>{2∞}[B<sub>8</sub><sup>t</sup>Si<sub>3</sub><sup>t</sup>O<sub>12</sub>(OH)<sub>3</sub>] P2<sub>1</sub>/c (≈Datolite) CAYSICHITE - (Y)  $\begin{array}{lll} \text{(Ca,Yb,Er)_4}^{(B)}(\text{H}_2\text{O})_7(\text{30})[\text{Sig}^{\dagger}\text{O}_{20}\{q\}[\text{C}^{t}\text{O}_3]_6(\text{OH})]} & \text{Ccm2}_1 \\ \text{CHALCOPHYLLITE} & \text{Cu}_9^{\circ}\text{Al}^{\circ}\text{As}_2^{\circ}\text{S}_{1.5}^{\bullet}[\text{O}_{14}(\text{OH})_{12}(\text{H}_2\text{O})_{18}] \\ \end{array}$ CHARLESITE Ca<sub>6</sub><sup>[8]</sup>(H<sub>2</sub>O)<sub>26</sub>{3∞}[Al<sub>2</sub>°S<sub>2</sub><sup>t</sup>B<sup>t</sup>O<sub>8</sub>(OH)<sub>4</sub>(OH,O)<sub>12</sub>] P31c (=Sturmanite) **DEMESMAEKERITÉ**  $\begin{array}{ll} \text{Pb}_2^{[9]}(\text{H}_2\text{O})_2\!\{3\!\infty\!\}\!\{\text{Cu}_6^{\,\text{O}}\!\text{Se}_6^{[4\!y]}\!\text{U}_2^{[7\!y]}\!\text{O}_{22}\!(\text{OH})_6\!\} & \text{P} & \bar{1} \\ \text{ERIONITE} & \text{K}_2^{[12]}\!\text{NaCa}_{1.5}\!\text{Mg}(\text{H}_2\text{O})_{28}\,\{\!3\!\infty\!\}\!\{\text{Al}_8^{\,\text{t}}\!\text{Si}_{28}^{\,\text{t}}\!\text{O}_{72}\!] \end{array}$ P6<sub>3</sub>/mmc (Zeolite) HUMBERSTONITE K<sub>3</sub><sup>[10]</sup>(H<sub>2</sub>O)<sub>6</sub>{2∞}[Na<sub>7</sub>°Mg<sub>2</sub>°S<sub>6</sub><sup>t</sup>N<sub>2</sub><sup>tr</sup>O<sub>30</sub>] R 3 (Subs.d.Ungemachite)

JAHNSITE - (CaMnFe) Ca<sup>[6]</sup>Mn<sup>[6]</sup>Fe<sub>2</sub><sup>(2+)o</sup>Fe<sub>2</sub><sup>(3+)o</sup>P<sub>4</sub> <sup>t</sup>  $[O_{16}(OH)_2.(H_2O)_8]$  Mon.s.g.? **JAHNSITE - (CaMnMg)** Ca<sup>[6]</sup>Mn<sup>[6]</sup>(Mg,Fe)<sub>2</sub>°Fe<sub>2</sub><sup>(3+)o</sup>P<sub>4</sub><sup>t</sup>  $[O_{16}(OH)_2(H_2O)_8]$  P2/a ( $\approx$ Whiteite) JAHNSITE - (CaMnMn) Ca<sup>[6]</sup>Mn<sup>[6]</sup>Mn<sub>2</sub>°Fe<sub>2</sub><sup>(3+)o</sup>P<sub>4</sub><sup>t</sup> [O<sub>16</sub>(OH)<sub>2</sub>(H<sub>2</sub>O)<sub>8</sub>] P2/a ... MORINITE (H<sub>2</sub>O)<sub>2</sub>{3∞}[Ca<sub>2</sub><sup>[8]</sup>Na<sup>[5by]</sup>{g}[Al<sub>2</sub><sup>o</sup>P<sub>2</sub><sup>t</sup>O<sub>8</sub>(OH)F<sub>4</sub>]] **PICROPHARMACOLITE**  $(H_2O)_{11}Ca_4^{[6/7]}{2\infty}[Mg^oAs_4^tO_{14}(OH)_2]$  P  $\bar{1}$  ( $\approx$ Guerinite) RICHELSDORFITE  $(H_2O)_6\{2\infty\}[Sb^o(OH)_6]\{2\infty\}[Ca_2{}^{[7]}Cu_5{}^{[5]}CI(As^tO_4)_4] \quad C2/m$ (≈Whiteite) **ROSCHERITE** (Monoclinic)  $(H_2O)_2Ca^{[7]}{3\infty}[(Mg,Fe)_2{}^oAl_x{}^oP_3{}^tO_{12}(OH)_3]$  C2/c

**ROSCHERITE (Triclinic)**  $\begin{array}{lll} (\text{H}_2\text{O})_3\text{Ca}^{[7]} \{\infty\} & \text{M}_1^2\text{OFe}_x \\ & \text{PO}_3 & \text{O}_{12} (\text{OH})_2 \right] & \text{C} & \bar{1} \\ & \text{ROUBAULTITE} & (\text{H}_2\text{O})_4 \{\infty\} & \text{Cu}_2^0\text{U}_3 \\ & \text{N}_3 & \text{Cu}_2^{[7/8]}\text{C}_2^{\text{tr}} \text{O}_{14} (\text{OH})_2 \right] & \text{P} & \bar{1} \\ & \text{N}_2 & \text{N}_3 & \text{N}_3 & \text{N}_4 \\ & \text{N}_3 & \text{N}_4 & \text{N}_4 & \text{N}_5 \\ & \text{N}_4 & \text{N}_4 & \text{N}_4 & \text{N}_4 \\ & \text{N}_5 & \text{N}_6 & \text{N}_8 & \text{N}_8 \\ & \text{N}_5 & \text{N}_8 & \text{N}_8 & \text{N}_8 \\ & \text{N}_6 & \text{N}_8 & \text{N}_8 & \text{N}_8 \\ & \text{N}_8 & \text{N}_8 & \text{N}_8 & \text{N}_8 & \text{N}_8 \\ & \text{N}_8 & \text{N}_8 & \text{N}_8 & \text{N}_8 & \text{N}_8 \\ & \text{N}_8 & \text{N}_8 & \text{N}_8 & \text{N}_8 & \text{N}_8 \\ & \text{N}_8 & \text{N}_8 & \text{N}_8 & \text{N}_8 & \text{N}_8 \\ & \text{N}_8 & \text{N}_8 & \text{N}_8 & \text{N}_8 & \text{N}_8 \\ & \text{N}_8 & \text{N}_8 & \text{N}_8 & \text{N}_8 \\ & \text{N}_8 & \text{N}_8 & \text{N}_8 & \text{N}_8 \\ & \text{N}_8 & \text{N}_8 & \text{N}_8 & \text{N}_8 \\ & \text{N}_8 & \text{N}_8 & \text{N}_8 & \text{N}_8 \\ & \text{N}_8 & \text{N}_8 & \text{N}_8 & \text{N}_8 \\ & \text{N}_8 & \text{N}_8 & \text{N}_8 & \text{N}_8 \\ & \text{N}_8 & \text{N}_8 & \text{N}_8 & \text{N}_8 \\ & \text{N}_8 & \text{N}_8 & \text{N}_8 & \text{N}_8 \\ & \text{N}_8 & \text{N}_8 & \text{N}_8 & \text{N}_8 \\ & \text{N}_8 & \text{N}_8 & \text{N}_8 & \text{N}_8 \\ & \text{N}_8 & \text{N}_8 & \text{N}_8 & \text{N}_8 \\ & \text{N}_8 & \text{N}_8 & \text{N}_8 & \text{N}_8 \\ & \text{N}_8 & \text{N}_8 & \text{N}_8 & \text{N}_8 \\ & \text{N}_8 & \text{N}_8 & \text{N}_8 & \text{N}_8 \\ & \text{N}_8 & \text{N}_8 & \text{N}_8 & \text{N}_8 \\ & \text{N}_8 & \text{N}_8 & \text{N}_8 & \text{N}_8 \\ & \text{N}_8 & \text{N}_8 & \text{N}_8 \\ & \text{N}_8 & \text{N}_8 & \text{N}_8 & \text{N}_8 \\ & \text{N}_8 & \text{N}_8 \\$ **STRONTIOJOAQUINITE**  $(Na,Fe)_2Ba_2Sr_2Ti_2^o(O,OH)_2(H_2O)\{2\infty\}[Si_8^tO_{24}]$  P2. STRONTIO-ORTHOJOAQUINITE Na<sub>2</sub>Ba<sub>2</sub>Sr<sub>2</sub>Ti<sub>2</sub>°(O,OH)<sub>2</sub>  $\begin{array}{lll} .(H_2O)\{2\infty\}[Si_8^{\dagger}O_{24}] & Pcam ... \\ \textbf{STURMANITE} & Ca_6^{(8)}Al_2^{\circ}S_2^{\dagger}[O_8(OH)_{16}(H_2O)_{25}] & P31c ? \end{array}$ (=Ettringite) THAUMASITE Ca<sub>6</sub>[8]Si°C<sup>tr</sup>O<sub>3</sub>S<sup>t</sup>[O<sub>7</sub>(OH)<sub>6</sub>(H<sub>2</sub>O)<sub>12</sub>] P6<sub>3</sub> (≈Ettringite) TUSCANITE  $\begin{array}{l} K^{(10)}\text{Ca}_{6}(\text{H}_{2}\text{O})(\text{OH})\{g\}[S^{t}\text{O}_{4}]\{g\}[C^{t}\text{O}_{3}]_{2}\{2\infty\}[(\text{Si}_{1}\text{Al})_{10}{}^{t}\text{O}_{22}] \ \ P2_{1}/a \\ \text{UNGEMACHITE} \ \ K_{3}^{110]}\text{Na}_{8}{}^{(6)}(\text{H}_{2}\text{O})_{6}[g][\text{Fe}^{6}(S^{t}\text{O}_{4})_{6}]\{g\}[\text{N}^{t}\text{O}_{3}]_{2} \end{array}$ **WENKITE**  $Ba_4^{[12]}Ca_6^{[8]}(OH)_2(SO_4)_3(H_2O)_n\{3\infty\}[(Si,Al)_{20}^{t}O_{39}]$ P 62m WHITEITE - (CaFeMg)  $Ca^{[8]}(Fe,Mn)^{[6]}Mg_2^{\circ}Al_2^{\circ}P_4^{t}[O_{16}(OH)_2(H_2O)_8]$  P2/a ( $\approx$ Jahnsite) WHITEITE - (MnFeMg)  $Mn^{[8]}Fe^{[6]}Mg_2^{\circ}Al_2^{\circ}P_4^{\dagger}[O_{16}(OH)_2(H_2O)_8]$  P2/a ... WHITEITE - (CaMnMg)  $Ca^{[8]}Mn^{[6]}Mg_2^{\circ}Al_2^{\circ}P_4^{\circ}[O_{16}(OH)_2(H_2O)_8]$  P2/a WICKSITE Ca2[9](H2O)2[300][Na0Mg0Fe0(Fe,Mn)40P6tO24] Pcah

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## $A_pB_qC_rD_sE_xF_yG_z.nAq.$ (cont.)

#### MINERALS NOT YET CLASSIFIED

**AËRINITE** Ca<sub>4</sub>(AI,Fe,Mg)<sub>10</sub>Si<sub>12</sub>O<sub>36</sub>(OH)<sub>12</sub>CO<sub>3</sub>.12H<sub>2</sub>O Mon.s.g.?

ALBRESCHTSCHRAUFITE  $Ca_4Mg(UO_2)_2(CO_3)_6F_2.17H_2O$  P  $\bar{1}$ 

**BURCKHARDTITE** Pb<sub>2</sub>(Fe,Mn)Te(Si<sub>3</sub>Al)O<sub>12</sub>(OH)<sub>2</sub>.H<sub>2</sub>O Mon.s.g.?

**BYELORUSSITE - (Ce)** NaBa $_2$ Ce $_2$ MnTi $_2$ Si $_8$ O $_2$ 6(F,OH).H $_2$ O P2 $_1$ 2 $_1$ 2 $_1$ 

ENGLISHITE  $K_3Na_2Ca_{10}AI_{15}(PO_4)_{21}(OH)_7.26H_2O$  A2/a ... FRANÇOISITE - (Nd)

(Nd,Y,Sm,Ce,Pr)(UO<sub>2</sub>)<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub>O(OH).6H<sub>2</sub>O P2<sub>1</sub>/c FRANSOLETITE Ca<sub>3</sub>Be<sub>2</sub>(PO<sub>4</sub>)<sub>2</sub>(PO<sub>3</sub>OH)<sub>2</sub>.4H<sub>2</sub>O P2<sub>1</sub>/a HYDROMBOBOMKULITE

 $\label{eq:condition} $$(Ni,Cu)Al_4(NO_3)_2(SO_4)(OH)_{12}.14H_2O $$ Mon.s.g.? $$ ILÍMAUSSITE - (Ce) $$Na_4Ba_2CeFeNb_2Si_8O_{28}.5H_2O $$ P6_3/mcm \dots$$$ 

 $\label{eq:continuity} \begin{array}{lll} \text{Poyntain} & \text{Monso}_4)(\text{CO}_3)(\text{OH})_6.12\text{H}_2\text{O} & \text{P6}_3 \dots \\ \text{KAMITUGAITE} & \text{PbAI}(\text{UO}_2)_5((\text{P},\text{As})\text{O}_4)_2(\text{OH})_9.9.5\text{H}_2\text{O} & \text{P1} \dots \\ \text{LANNONITE} & \text{HCa}_4\text{Mg}_2\text{Al}_4(\text{SO}_4)_8\text{F}_9.32\text{H}_2\text{O} & \text{Tet.s.g.?} \\ \text{MACQUARTITE} & \text{CuPb}_3(\text{CrO}_4)\text{SiO}_3(\text{OH})_4.2\text{H}_2\text{O} & \text{C2/m} \dots \\ \text{MANTIENNEITE} & \text{KMg}_2\text{Al}_2\text{Ti}(\text{PO}_4)_4(\text{OH})_3.15\text{H}_2\text{O} & \text{Pbca} \\ \text{MCNEARITE} & \text{NaCa}_5(\text{AsO}_4)(\text{AsO}_3\text{OH})_4.4\text{H}_2\text{O} & \text{P1} \dots \\ \text{MELKOVITE} & \text{CaFe}_2\text{Mo}_5\text{O}_{10}(\text{PO}_4)_2(\text{OH})_{12}.8\text{H}_2\text{O} & \text{Mon.s.g.?} \\ \text{NICKELALUMITE} & (\text{Ni},\text{Cu})\text{Al}_4(\text{SO}_4)(\text{NO}_3)_2(\text{OH})_{12}.3\text{H}_2\text{O} \\ \text{Mon.s.g.?} \end{array}$ 

PAULKERRITE K(Mg,Mn)<sub>2</sub>Ti(Fe,Al)<sub>2</sub>(PO<sub>4</sub>)<sub>4</sub>(OH)<sub>3</sub>.15H<sub>2</sub>O Pbca

PEISLEYITE Na<sub>3</sub>Al<sub>16</sub>(PO<sub>4</sub>)<sub>10</sub>(SO<sub>4</sub>)<sub>2</sub>(OH)<sub>17</sub>.20H<sub>2</sub>O Mon.s.g.? PERHAMITE Ca<sub>3</sub>Al<sub>7</sub>(SiO<sub>4</sub>)<sub>3</sub>(PO<sub>4</sub>)<sub>4</sub>(OH)<sub>3</sub>.16.5H<sub>2</sub>O P6/mmm PLANERITE Al<sub>6</sub>(PO<sub>4</sub>)<sub>2</sub>(PO<sub>3</sub>OH)<sub>2</sub>(OH)<sub>8</sub>.4H<sub>2</sub>O P 1 ? POTTSITE PbBi(VO<sub>4</sub>)(VO<sub>3</sub>OH).2H<sub>2</sub>O I 4<sub>1</sub>22

RABBITTITE Ca<sub>3</sub>Mg<sub>3</sub>(UO<sub>2</sub>)<sub>2</sub>(CO<sub>3</sub>)<sub>6</sub>(OH)<sub>4</sub>.18H<sub>2</sub>O P2<sub>1</sub>/a ? RANUNCULITE AI(UO<sub>2</sub>)(PO<sub>3</sub>OH)(OH)<sub>3</sub>.4H<sub>2</sub>O Mon.s.g.? RITTMANNITE

 $(Mn,Ca)Mn(Fe,Mn,Mg)_2(Al,Fe)_2(PO_4)_4(OH)_2.8H_2O \ P2/a \\ \textbf{SHABAITE - (Nd)} \ Ca(Nd,Sm,Y)_2(UO_2)(CO_3)_4(OH)_2.6H_2O \\ P2...$ 

•SKLODOWSKITE (H<sub>3</sub>O)<sub>2</sub>Mg(UO<sub>2</sub>)<sub>2</sub>(SiO<sub>4</sub>)<sub>2</sub>.4H<sub>2</sub>O C2/m SODIUM BETPAKDALITE

 $Na_2CaFe_2^{3+}(As_2O_4)(MoO_4)_6.15H_2O$  Mon.s.g.? **SODIUM BOLTWOODITE**  $(H_3O)(Na,K)(UO_2)SiO_4.H_2O$  P2<sub>1</sub>2<sub>1</sub>2<sub>1</sub>

TYROLITE CaCu<sub>5</sub>(AsO<sub>4</sub>)<sub>2</sub>(CO<sub>3</sub>)(OH)<sub>4</sub>.6H<sub>2</sub>O Pmma

UPALITE Al(UO<sub>2</sub>)<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub>O(OH).7H<sub>2</sub>O Bbcm ...

VOCHTENITE (Fe<sup>2+</sup>,Mg)Fe<sup>3+</sup>(UO<sub>2</sub>)<sub>4</sub>(PO<sub>4</sub>)<sub>4</sub>(OH).12-13H<sub>2</sub>O

Mon.s.g.?

**WALENTAITE** H<sub>4</sub>Ca<sub>4</sub>Fe<sub>12</sub>(AsO<sub>4</sub>)<sub>10</sub>(PO<sub>4</sub>)<sub>6</sub>.28H<sub>2</sub>O I 222 ... **WYARTITE** Ca<sub>3</sub>U(UO<sub>2</sub>)<sub>6</sub>(CO<sub>3</sub>)<sub>2</sub>(OH)<sub>18</sub>.4H<sub>2</sub>O P2<sub>1</sub>2<sub>1</sub>2<sub>1</sub> **YECORAITE** Fe<sub>3</sub>Bi<sub>5</sub>O<sub>9</sub>(TeO<sub>3</sub>)(TeO<sub>4</sub>)<sub>2</sub>.9H<sub>2</sub>O S.?

## $A_pB_qC_rD_sE_xF_yG_z...$ nAq.

#### MINERALS TENTATIVELY CLASSIFIED

**ALTHUPITE** 

 $U^{[7by]}$ Th<sup>[6p3c]</sup>Al<sup>o</sup>O(OH)<sub>3</sub>(H<sub>2</sub>O)<sub>15</sub>{2 $\infty$ }[(UO<sub>2</sub>)<sub>3</sub>O(OH)(P<sup>t</sup>O<sub>4</sub>)<sub>2</sub>]<sub>2</sub> P  $\overline{1}$  ( $\approx$ Phosphuranylite)

ASHCROFTINE - (Y)

 $K_5^{[10/12]}$ Na<sub>5</sub><sup>[8/12]</sup>(Y,Ca)<sub>12</sub>(C<sup>tr</sup>O<sub>3</sub>)<sub>8</sub>(H<sub>2</sub>O)<sub>8</sub>(OH)<sub>2</sub>{2 $\infty$ }[Si<sub>28</sub><sup>t</sup>O<sub>70</sub>]

I 4/mmm (≈Apophyllite)

**CARLETONITE** 

 $\begin{array}{lll} & K^{(10)}Na^{[5+1]}Ca^{[7]}(CO_3)_4(F,OH)(H_2O)\{2\infty\}[Si_8^{\dagger}O_{18}] & P4/mbm\_EHRLEITE & Ca_2^{[7/8]}(P^tO_3OH)(H_2O)_4\{2\infty\}[Zn^tBe^tP_2^{\dagger}O_8] & P & I \\ & \textbf{JOAQUINITE - (Ce)} \end{array}$ 

 $Na^{[6]}Ba_2^{[10]}Fe^{[5]}Ti_2^{\circ}Ce_2^{[7]}O_2(OH)(H_2O)\{2\infty\}[Si_4^{\dagger}O_{12}]_2$  C2 ORTHOJOAQUINITE - (Ce)

ORTHOJOAQUINITE - (Ĉe) Na $^{[5]}$ Ba $_2^{[10]}$ Fe $^{[5]}$ Ti $_2^{\circ}$ Ce $_2^{[7]}$ O $_2$ (O,OH)(H $_2$ O)  $\{2\infty\}$ [Si $_4^{\dagger}$ O $_{12}$ ] $_2$ Ccmm...

**PUMPELLYITE** - ( $Fe^{2+}$ )  $Ca_2^{[7]}(H_2O)\{3\infty\}[Fe^{\alpha}Al_2^{\alpha}Si_3^{\dagger}O_{11}(OH)_2]$  A2/m ( $\approx$ Clinozoisite)

**PUMPELLYITE** - ( $Fe^{3+}$ )  $Ca_2^{[7]}(H_2O)\{3\infty\}[Fe^{\circ}Al_2^{\circ}Si_3^{\dagger}O_{11}(OH)_2]$  A2/m ( $\approx$ Clinozoisite)

**PUMPÈLLYITE - (Mg)**  $Ca_2^{[7]}(H_2O)\{3\infty\}[Mg^0Al_2^0Si_3^!O_{11}(OH)_2)]$  A2/m

**PUMPELLYITE - (Mn)**  $Ca_2^{[7]}$  (H<sub>2</sub>O){3 $\infty$ }[Mn°Al<sub>2</sub>°Si<sub>3</sub><sup>t</sup>O<sub>11</sub>(OH)<sub>2</sub>] A2/m

**ROEBLINGITE**  $Ca_6{}^{\circ}Pb_2(OH)_2(H_2O)_4\{2\infty\}[Mn^{\circ}(Si_3{}^{t}O_9)_2]$  C2/m

**SCHRÖCKINGERITE** 

 $\begin{array}{ll} (H_2O)_4\{2\infty\}[NaCa_3(UO_2)(C^{tr}O_3)_3(S^{t}O_4)F(H_2O)_6] & P \ \overline{1} \ ... \\ \textbf{SHUISKITE} & Ca_2^{r/3}\{3\infty\}[Mg^oCr_2^oSi^tO_4Si_2^tO_7(OH)_2(H_2O)] & A2/m \\ (=&Pumpellyite) \end{array}$ 

**VISÉITE**  $Ca_{10}Al_{24}(PO_4)_{14}F_3O_{13}(H_2O)_{72}\{3\infty\}[Si_6^{\ t}O_{24}]$  Cub.s.g.? ( $\approx$ Analcime,Zeolite)

Table 78S

## $A_pB_qC_rD_sE_xF_vG_z...$ nAq.(cont.)

#### MINERALS NOT YET CLASSIFIED

CHESSEXITE Na<sub>4</sub>Ca<sub>2</sub>Mg<sub>3</sub>Al<sub>8</sub>(SiO<sub>4</sub>)<sub>2</sub>(SO<sub>4</sub>)<sub>10</sub>(OH)<sub>10</sub>.40H<sub>2</sub>O Orth.s.g.?

**COCONINOITE** Fe<sub>2</sub><sup>3+</sup>Al<sub>2</sub>(UO<sub>2</sub>)<sub>2</sub>(PO<sub>4</sub>)<sub>4</sub>(SO<sub>4</sub>)(OH)<sub>2</sub> 20H<sub>2</sub>O Orth.s.g.?

IQUIQUEITE K<sub>3</sub>Na<sub>4</sub>Mg(CrO<sub>4</sub>)B<sub>24</sub>O<sub>39</sub>(OH).12H<sub>2</sub>O P31c **LEPERSONNITE - (Gd)** 

Ca(Gd,Dy)<sub>2</sub>(UO<sub>2</sub>)<sub>24</sub>(CO<sub>3</sub>)<sub>8</sub>Si<sub>4</sub>O<sub>12</sub>.60H<sub>2</sub>O Pnnm ... MACHATSCHKIITE (Ca,Na)<sub>6</sub>(AsO<sub>4</sub>)(AsO<sub>3</sub>OH)<sub>3</sub>PO<sub>4</sub>.15H<sub>2</sub>O

MCAUSLANITE Fe<sub>3</sub>Al<sub>2</sub>(PO<sub>4</sub>)<sub>3</sub>(PO<sub>3</sub>OH)F.18H<sub>2</sub>O P1... **MENDOZAVILITE** 

NaCa<sub>2</sub>Fe<sub>6</sub>(PO<sub>4</sub>)<sub>2</sub>(PMo<sub>11</sub>O<sub>39</sub>)(OH,CI)<sub>10</sub>.33H<sub>2</sub>O S.?

ASSELBORNITE (Pb,Ba)(UO<sub>2</sub>)<sub>6</sub>(BiO)<sub>4</sub>(AsO<sub>4</sub>)<sub>2</sub>(OH)<sub>12</sub>.3H<sub>2</sub>O OBRADOVICITE H<sub>4</sub>(K,Na)CuFe<sub>2</sub>(AsO<sub>4</sub>)(MoO<sub>4</sub>)<sub>5</sub>.12H<sub>2</sub>O

**ORPHEITE** H<sub>6</sub>Pb<sub>10</sub>Al<sub>20</sub>(PO<sub>4</sub>)<sub>12</sub>(SO<sub>4</sub>)<sub>5</sub>(OH)<sub>40</sub>.11H<sub>2</sub>O(?) R 3m **PARAMENDOZAVILITE** 

 $NaAl_4Fe_7(PO_4)_5(PMo_{12}O_{40})(OH)_{16}.56H_2O$  S.?

**SARYARKITE - (Y)** Ca(Y,Th)Al<sub>5</sub>(SiO<sub>4</sub>)<sub>2</sub>(PO<sub>4</sub>)<sub>2</sub>(OH)<sub>7</sub>.6H<sub>2</sub>O

**SERGEEVITE** Ca<sub>2</sub>Mg<sub>11</sub>(CO<sub>3</sub>)<sub>4</sub>(HCO<sub>3</sub>)<sub>4</sub>(OH)<sub>4</sub>.6H<sub>2</sub>O Trig.s.g.?

STEENSTRUPINE - (Ce)

 $Na_{14}Ce_6Mn_2Fe_2Zr(PO_4)_7Si_{12}O_{36}(OH)_2.3H_2O R \bar{3}m$ TATARSKITE Ca<sub>6</sub>Mg<sub>2</sub>(SO<sub>4</sub>)<sub>2</sub>(CO<sub>3</sub>)<sub>2</sub>Cl<sub>4</sub>(OH)<sub>4</sub>.7H<sub>2</sub>O S.? XIANGJIANGITE (Fe,AI)(UO<sub>2</sub>)<sub>4</sub>(PO<sub>4</sub>)<sub>2</sub>(SO<sub>4</sub>)<sub>2</sub>(OH).22H<sub>2</sub>O Tet.s.g.?

### ORGANIC MINERALS

#### **GROUP**

UREA {g}[C<sup>tr</sup>O(NH<sub>2</sub>)<sub>2</sub>] P 42<sub>1</sub>m

#### MINERALS TENTATIVELY CLASSIFIED

ABELSONITE  $\{g\}[NiC_{31}H_{32}N_4]$  P1... ACETAMIDE  $\{g\}[C^{tr}O(CH_3)(NH_2)]$  R3c CALCLACITE {g}[Ca(CH<sub>3</sub>COO)Cl(H<sub>2</sub>O)<sub>5</sub>] P2<sub>1</sub>/a FICHTELITE {9}[C<sub>19</sub>H<sub>34</sub>] P2<sub>1</sub> **HARTITE** {g}[C<sub>20</sub>H<sub>34</sub>] P 1 **HUMBOLDTINE**  $\{1\infty\}[C_2O_4Fe(H_2O)_2]$  C2/c

KLADNOITE {g}[C<sub>6</sub>H<sub>4</sub>(CO)<sub>2</sub>NH] P2<sub>1</sub>/n KRATOCHVILITE {g}[C<sub>13</sub>H<sub>10</sub>] Pnam MELLITE Al2°(H2O)16{g}[C6(COO)6] P41/acd URICITE {g}[C<sub>5</sub>H<sub>4</sub>N<sub>4</sub>O<sub>3</sub>] P2<sub>1</sub>a WEDDELLITE  $(H_2O)_2Ca[O]_2\{g\}[CO_2]$  | 4/m

#### MINERALS NOT YET CLASSIFIED

AMBER [C,H,O] Amorph. EARLANDITE Ca<sub>3</sub>(C<sub>6</sub>H<sub>5</sub>O<sub>7</sub>)<sub>2</sub>.4H<sub>2</sub>O Mon.s.g.? EVENKITE C24H50 Mon. P21/a FLAGSTAFFITE C<sub>10</sub>H<sub>22</sub>O<sub>3</sub> Fdd2 GLUSHINSKITE MgC2O4.2H2O C2/c GUANINE C5H3(NH2)N4O P21/n HOELITE C<sub>14</sub>H<sub>8</sub>O<sub>2</sub>. P2<sub>1</sub>/a IDRIALITE C22H14 Orth.s.g.? KARPATITE C24H12. P2/C MINGUZZITE K<sub>3</sub>Fe(C<sub>2</sub>O<sub>4</sub>)<sub>3</sub>.3H<sub>2</sub>O Mon.s.g.?

MOOLOOITE CuC<sub>2</sub>O<sub>4</sub>.nH<sub>2</sub>O Orth.s.g.? **OXAMMITE** (NH<sub>4</sub>)<sub>2</sub>C<sub>2</sub>O<sub>4</sub>.H<sub>2</sub>O P2<sub>1</sub>2<sub>1</sub>2 PHYLLORETINE C<sub>18</sub>H<sub>18</sub> Pnn2 REFIKITE  $C_{20}H_{32}O_2$   $P2_12_12$ SIMONELLITE C<sub>19</sub>H<sub>24</sub> Pnaa STEPANOVITE NaMgFe(C2O4)3.8-9H2O Trig.s.g.? **WHEATLEYITE** Na<sub>2</sub>Cu(C<sub>2</sub>O<sub>4</sub>)<sub>2</sub>.2H<sub>2</sub>O P  $\bar{1}$ ●WHEWELLITE CaC<sub>2</sub>O<sub>4</sub>.H<sub>2</sub>O P2<sub>1</sub>/c ZHEMCHUZHNIKOVITE NaMg(AI,Fe)(C2O4)3.8H2O Trig.s.g.?

 $\begin{tabular}{lll} Tale \ 79S & MINERAL \ STRUCTURE \ TYPES \ corresponding \ to \ general \ structural \ formulas \ A_mB_n.nAq. \ up \ to \ A_pB_r...E_xF_y...nAq., \ and \ to \ organic \ minerals \ \end{tabular}$ 

	CLOSE-PACKED	GROUP
A <sub>m</sub> B <sub>n</sub> .nAq.		
A <sub>p</sub> B <sub>q</sub> C <sub>r</sub> .nAq.	MANJIROITE $Mn_8^{\circ}(Na,K)O_{16}(H_2O)_n]^{cnn}$ (Dist.d.Hollandite)	<b>NATRON</b> [{g}Na <sub>2</sub> °(H <sub>2</sub> O) <sub>10</sub> {g}[C <sup>tr</sup> O <sub>3</sub> ]°]
$A_pB_qC_rD_s.nAq.$	CLINOHEDRITE Ca°Zn'Si'[O <sub>4</sub> (H <sub>2</sub> O)]° JUNITOITE Ca°Zn <sub>2</sub> 'Si <sub>2</sub> '[O <sub>7</sub> (H <sub>2</sub> O)]°	
$A_pB_qC_rD_sE_x.nAq$		
$A_pB_qC_rD_sE_xF_y.nAq$		
$A_pB_qC_rD_sE_xF_yG_z.nAq$		
$A_pB_qC_rD_sE_xF_yG_z$ nAq.		
ORGANIC MINERALS		UREA {g}[C"O(NH <sub>2</sub> ) <sub>2</sub> ]

CHAIN	SHEET	FRAMEWORK			
	<b>GYPSUM</b> {2∞}[Ca <sup>(6+2)</sup> (H <sub>2</sub> O) <sub>2</sub> S <sup>1</sup> O₄]	KIESERITE 3[Mg°S¹O4(H2O)] VARISCITE (H2O)2{3[Al°P¹O4]			
$^{3}_{2}$ $^{\text{T}}$ $^{\text{D}}_{2}$ $^{\text{O}}_{3}$ $^{\text{O}}$ $^{O$	HALLOYSITE-10Å  (H <sub>2</sub> O) <sub>2</sub> (2ω){ Al <sub>2</sub> °(OH) <sub>4</sub> (2ω){Si <sub>2</sub> ¹O <sub>5</sub> ]° }  PALYGORSKITE  (Mg,AI) <sub>2</sub> °(H <sub>2</sub> O) <sub>4</sub> (OH){2ω}{Si <sub>4</sub> ¹O <sub>10</sub> ]  SEPIOLITE  Mg <sub>4</sub> °(H <sub>2</sub> O) <sub>6</sub> (OH) <sub>2</sub> (2ω){Si <sub>6</sub> ¹O <sub>16</sub> ]	ANALCIME(cubic)  Na(H <sub>2</sub> O){3∞}{Si <sub>2</sub> 'Ai'O <sub>6</sub> ] (Zeolite)  CHABAZITE  ((Ca,□ <sub>6</sub> )(H <sub>2</sub> O) <sub>6</sub> ){3∞}{Ai <sub>4</sub> 'Si <sub>4</sub> 'O <sub>16</sub> ] (Zeolite)  GISMONDINE  Ca <sub>2</sub> (H <sub>2</sub> O) <sub>6</sub> }(3∞){Al <sub>4</sub> 'Si <sub>4</sub> 'O <sub>16</sub> ]  HEULANDITE  (Na,K,Ca,Sr,Ba) <sub>6</sub> <sup>(6)</sup> (H <sub>2</sub> O) <sub>26</sub> (3∞){Al <sub>6</sub> 'Si <sub>27</sub> 'O <sub>72</sub> ]  (Zeolite)  NATROLITE  Na <sub>2</sub> °(H <sub>2</sub> O) <sub>2</sub> (3∞){Si <sub>5</sub> 'Al <sub>2</sub> O <sub>16</sub> ] (Zeolite)  SCOLECITE			
	AUTUNITE $ (H_2O)_{10} \left[ \text{ Cas}^{[0]} \{2\omega\} \left[   U^{[2+4]} O_2 P^{\dagger} O_4 \right]_2 \right] $ CARNOTITE $ K_2^{[11]} (H_2O)_3 \left[ 2\omega\} \left[ (U^{[2+5]} O_2)_2 \left( V_2^{[5]} O_8 \right) \right] $ HYDROXYAPOPHYLLITE $ C_4^{[7]} K^{[8]} (OH, F) (H_2O)_8 \left[ 2\omega\} \left[ Si_5^{[5]} O_{20} \right]^6 $ META-AUTUNITE $ (H_2O)_8 \left[ \text{Ca}^{[6]} \left\{ 2\omega \right\} \left[ U^{[2+4]} O_2 P^{\dagger} O_4 \right]_2 \right] $ METATORBERNITE $ (H_2O)_8 \left[ \text{Cu}^{[6]} \left\{ 2\omega \right\} \left[ U^{[2+4]} O_2 P^{\dagger} O_4 \right]_2 \right] $ MONTMORILLONITE $ (H_2O)_6 \left[ \text{Cu}^{[6]} \left\{ 2\omega \right\} \left[ U^{[2+4]} O_2 P^{\dagger} O_4 \right]_2 \right] $ MONTMORILLONITE $ (H_2O)_6 \left[ \text{Cu}^{[6]} \left\{ 2\omega \right\} \left[ (H_2O)_6 M_{90}^{2} O_7^2 \right] \right] $ VERMICULITE $ (H_2O)_8 M_{90}^{2} \left[ (H_2O)_8 M_{90}^{2} O_7^2 \right] $ (Mg,Fe,Al) $_8^{[6]} \left( \text{OH})_2 \left[ 2\omega \right] \left[ (\text{Si},\text{Al})_8 \left  \text{O}_2 \right  \right] \right] $ TRONA $ \left\{ 2\omega \right\} \left[ \text{Na}_8 \sigma^6 H (H_2O)_2 (g) \left[ \text{C}^{[6]} O_3 \right]_2 \right] $ URANOPHANE $ C_8^{[6]} (H_2O)_5 H_2 \left\{ 2\omega \right\} \left[ (U^{[2+5]} O_2)_2 (\text{Si}^{[7]} O_4)_2 \right] $	$ \begin{array}{l} \textbf{Ca}^{[7]}(H_2O)_3[3\omega)[Si_3^*Al_2O_{10}] \\ \textbf{PHILLIPSITE} \\ \textbf{K}^{[12]}(Ca_{0.5},Na)_2^{[8]}(H_2O)_6[3\omega)[Si_3^*Al_3^!O_{16}] \\ \textbf{(Zeolite)} \\ \textbf{STILBITE} \\ \textbf{Na}^{[8]}\textbf{Ca}_a^{[8]}(H_2O)_{30}[3\omega)[Si_{27}^*Al_6O_{72}] \\ \textbf{(Zeolite)} \\ \textbf{THOMSONITE} \\ \textbf{NaCa}_2(H_2O)_6[3\omega)[Al_3^!Si_5^!O_{20}] \\ \textbf{(Zeolite)} \\ \textbf{TURQUOISE} \\ \textbf{CU}^{[8]}(H_2O)_4[3\omega)[Al_6^*(OH)_6(P^!O_4)_4] \\ \textbf{WILLHENDERSONITE} \\ (\textbf{K},\textbf{Ca},\textbf{D4})(H_2O)_5[3\omega)[Al_3^!Si_3^!O_{12}] \\ \textbf{(Deriv.Chabazite,Zeolite)} \end{array} $			

Table 80S  $\label{eq:minerals} \mbox{Minerals from $A_mB_n$.nAq. up to $A_pB_qC_rD_sE_xF_yG_z...nAq. and organic minerals}$ 

	CLOSE- PACKED	GROUP	CHAIN	SHEET	FRAMEWORK	TENT.CLASS.	NOT YET CLASS.	TOTAL
A <sub>m</sub> B <sub>n</sub> .nAq	-	-		-	-	8	14	22
A <sub>p</sub> B <sub>q</sub> C <sub>r</sub> .nAq	1	1	-	1 (+2)	2 (+10)	61 (+9)	65 (+02)	154
A <sub>p</sub> B <sub>q</sub> C <sub>r</sub> D <sub>s</sub> .nAq	2	-	2	3 (+1)	6 (+1)	154	117 (+@11)	297
A <sub>p</sub> B <sub>q</sub> C <sub>r</sub> D <sub>s</sub> E <sub>x</sub> .nAq	-	-		7 (+15)	5 (+1)	151	107 (+•11)	297
A <sub>p</sub> B <sub>q</sub> C <sub>r</sub> D <sub>s</sub> E <sub>x</sub> F <sub>y</sub> .nAq	-	-	-	2	•	58	85 (+@2)	147
A <sub>p</sub> B <sub>q</sub> C <sub>r</sub> D <sub>s</sub> E <sub>x</sub> F <sub>y</sub> G.nAq	-	-		-	-	27	33 (+@2)	62
A <sub>p</sub> B <sub>q</sub> C <sub>r</sub> D <sub>p</sub> E <sub>x</sub> F <sub>y</sub> GnAq	-	-	-	-	-	14	16	30
<b>ORGANIC MINERALS</b>	-	1				11	17 (+@2)	31
TOTAL	3	2	2	13 (+18)	13 (+12)	484 (+9)	454 (+@38)	1040

### Amorpous 10

 $\begin{array}{ll} X(+y) & x(structure\ types)\ +y(Population+derivatives) \\ Z(+\bullet) & z(minerals)\ +\bullet w(minerals\ with\ determined\ structure) \end{array}$ 

#### **MINERAL STRUCTURE TYPES**

	CLOSE- PACKED	GROUP	CHAIN	SHEET	FRAMEWORK	TOTAL	% CLOSE- PACKED
A <sub>m</sub> B <sub>n</sub> .nAq	-	-	-	-	-	•	-
A <sub>p</sub> B <sub>q</sub> C <sub>r</sub> .nAq	1	1	-	1	2	5	20.0
A <sub>o</sub> B <sub>o</sub> C <sub>r</sub> D <sub>s</sub> .nAq	2	-	2	3	6	13	15.4
A <sub>p</sub> B <sub>q</sub> C <sub>r</sub> D <sub>s</sub> E <sub>x</sub> .nAq	-	-	-	7	5	12	•
A <sub>o</sub> B <sub>o</sub> C <sub>r</sub> D <sub>o</sub> E <sub>x</sub> F <sub>v</sub> .nAq	-	-	-	2	-	2	•
A <sub>p</sub> B <sub>q</sub> C <sub>r</sub> D <sub>s</sub> E <sub>x</sub> F <sub>y</sub> G.nAq	-	-	-		-	-	
A <sub>p</sub> B <sub>q</sub> C <sub>r</sub> D <sub>s</sub> E <sub>x</sub> F <sub>y</sub> GnAq	-	-	-	-	-	-	-
ORGANIC MINERALS	-	1		-	-	1	
TOTAL	3	2	2	13	13	33	9.1

Table 81S

#### **CLOSE-PACKED MINERALS**

	CLOSE- PACKED	CLOSE-PACKED TENT. CLASSIFIED	TOTAL CLOSE- PACKED	TOTAL MINERALS	% CLOSE- PACKED	
A <sub>m</sub> B <sub>n</sub> .nAq	-	8	8	22	36.4	
A <sub>p</sub> B <sub>q</sub> C <sub>r</sub> .nAq	1	76	77	154	50.0	
A <sub>p</sub> B <sub>q</sub> C <sub>r</sub> D <sub>s</sub> .nAq	2	62	64	299	21.4	
A <sub>p</sub> B <sub>q</sub> C <sub>r</sub> D <sub>s</sub> E <sub>x</sub> .nAq	-	34	34	300	11.3	
A <sub>0</sub> B <sub>0</sub> C <sub>r</sub> D <sub>8</sub> E <sub>x</sub> F <sub>y</sub> ,nAq	-	9	9	147	6.1	
A <sub>p</sub> B <sub>q</sub> C <sub>r</sub> D <sub>s</sub> E <sub>x</sub> F <sub>y</sub> G.nAq	-	9	9	62	14.5	
A <sub>p</sub> B <sub>q</sub> C <sub>r</sub> D <sub>s</sub> E <sub>x</sub> F <sub>y</sub> GnAq	-	-	-	30		
ORGANIC MINERALS	-	-	-	32	-	
TOTAL	3	197	201	1040	19.3	

#### **CRYSTALLOGRAPHIC PARAMETERS OF MINERAL STRUCTURES**

	≤15A	>15A	≤25A	>25A	TOTAL	%≤15A	%≤25A
A <sub>m</sub> B <sub>n</sub> .nAq	12	5	17	-	17	70.6	100.0
A <sub>p</sub> B <sub>q</sub> C <sub>r</sub> .nAq	114	65	165	14	179	63.7	92.2
A <sub>p</sub> B <sub>q</sub> C <sub>r</sub> D <sub>s</sub> .nAq	153	129	261	21	282	54.3	92.6
A <sub>p</sub> B <sub>q</sub> C <sub>r</sub> D <sub>s</sub> E <sub>x</sub> .nAq	125	166	260	31	291	43.0	89.3
A <sub>p</sub> B <sub>q</sub> C <sub>r</sub> D <sub>s</sub> E <sub>x</sub> F <sub>y</sub> .nAq	38	103	120	21	141	27.0	85.1
A <sub>p</sub> B <sub>q</sub> C <sub>r</sub> D <sub>s</sub> E <sub>x</sub> F <sub>y</sub> G.nAq	23	36	51	8	59	39.0	86.4
A <sub>p</sub> B <sub>q</sub> C <sub>r</sub> D <sub>s</sub> E <sub>x</sub> F <sub>y</sub> GnAq	7	18	21	4	25	28.0	84.0
ORGANIC MINERALS	13	14	24	3	27	48.1	88.9
TOTAL	485	536	919	102	1021	47.5	90.0

### Conclusions

This work is the first attempt to present a structural classification of the whole domain of minerals, and, like any pioneer work, it will certainly be incomplete and contain a number of errors. Its aim is to relate the mineral structures in a natural and easy way, and this is accomplished by a structural classification and the use of structural formulas. What is now required is to develop and improve the structural formulas, by revisiting works on structure determination of minerals, and to pay more attention to the new determinations in order to present complete structural descriptions.

There is a clear tendency in minerals towards close packing (for the highest density of atoms, in agreement with the stability principle of Laves, 1956). As Moore said (1995, p. 3): "a large number, probably several hundreds (of closest-packed structures), have been overlooked through misrepresentation in early studies". However such a tendency decreases with the complexity of the chemical formula.

Some of the minerals that were tentatively classified as close-packed have afterwards been confirmed to be so. Examples are: Allactite  $\mathrm{Mn_7^oAs_2^t[(OH)_4O_8]^{ch}}$  P2<sub>1</sub>/a, Arsenoclasite  $\mathrm{Mn_5^oAs_2^t[(OH)_4O_8]^{ch}}$  P2<sub>1</sub>2<sub>1</sub>2<sub>1</sub> and Flinkite  $\mathrm{Mn_2^oMn^{lobyl}As^t[O_4(OH)_4]^{ch}}$  Pnma (Moore 1995, p. 15–19) (see Vol. 2, Tables 73, 75 and 86).

Considering this strong tendency towards close packing, one should try first to determine if the mineral structure fits in a close packing or not. To achieve this purpose, appropiate graphical projections should be used along with computer programs developed in order to facilitate the solution of the structural problem.

The computer programs should enable the plane direction with the highest density of atoms in a structure to be found, and also the structure to be sliced along a certain plane direction (hkl). Attempts to develop such programs, namely the PRSH and the PRCM programs, were made by Langlet (1975). Some interesting computer programs are already commercially available, such as *Diamond* (Bergerhoff, 1995).

The analysis of the crystallographic parameters of the unit cell of the various minerals has shown that many mineral structures have small crystallographic parameters, equal to 15Å or less (Tables 81S of Vol. 3, 63S of Vol. 2 and 25S of Vol. 1). However, when mineral structures are sampled for crystallographic parameters not greater than 25Å, their numbers increase significantly over those pertaining to 15Å: some 90% for structures dealt with in Vol. 3, 92% for those in Vol. 2, and 94% for Vol. 1. So much so that, once we have covered the whole domain of minerals, we are in a position to state that most of the mineral structures have crystallographic parameters that do not exceed 25Å. This fact is possibly related to some shortrange mechanism of mineral crystallization.

Many minerals are based not on ideal but on slightly distorted close packings, therefore it is interesting to measure the packing efficiency of the mineral structures. Some authors have proposed such measurements, examples being Zoltai and Stout (1984) and Moore (1992). One of the difficulties in the determination of the structural categories of the mineral structures results from the fact that many mineralogists are not much concerned with close packings but rather with clusters or higher structural units. On the other

hand, when they think of close packings they restrict themselves to the closest packings and not to close packings in a wider sense. If a mineral structure is not based on a close packing, it is however interesting to search for its close packing analogue, and for this new computer programs are called for.

Further to the well established character of the chemical plus structural classification of minerals, a number of arguments may be evoked for the predominance of the structural over the chemical factor. Gottardi wrote in 1984: "[...] a purely structural classification is unavoidable nowadays, but with the disadvantage of having galena and rock salt in the same box". Even Strunz in certain cases gives more importance to the structural than to the chemical factor, for instance in placing together arsenates and phosphates on account of their structural similarity (Tagilite–Euchorite group, Strunz, 1982, pp. 340–341).

On the other hand the use of the chemical plus structural classification does not always lead to the same results. Examples are the works of Strunz and Povarennykh, which do not present the same list of similar minerals for the same mineral group. A specific example is the Seidozerite group (Seidozerite–Lamprophyllite group, Strunz, 1982, p. 394, and Seidozerite group, Povarennykh, 1966/1972, p. 398). The structural classification avoids this ambiguity, because it has well defined rules for the organization of similarity among minerals.

We are at the beginning of the structural classification of minerals. What is necessary now is to

develop and use computer programs which will facilitate a better structural description of minerals, the study of the relation between their structure and properties, and relationships among the minerals. If one wants to understand the minerals and their properties one has first to use structural formulas, as was strongly recommended by the Nomenclature Commission of the International Union of Crystallography (Lima-de-Faria et al., 1990).

On perusing the three volumes of this complete set, one cannot help feeling the health of information laid before one as tabled structure types. Although the tables are essentially concerned with structural formulas, on some of them, namely, Tables 1S to 21S, 27S to 59S, and 73S to 78S, the space groups have also been indicated. This was done whenever it was felt that a tool should be provided to clearly distinguish a given structure type from its distortion derivatives. In order not to overload the tables, however, the author has resisted the temptation to generalize the use of such a device: when its mention was not deemed compulsory, the space group has not been included in the tables. However, because complete information is strongly desirable, it is forseeable that, in the rather near future, the space group (information on physical properties) will usually be added to the symbol of the structure type, as proposed by Lima-de-Faria and Figueiredo (1976) and Lima-de-Faria (1994) (information of the structural formula). For instance, Naº[Cl]º Fm3m will probably become common for the structure type symbol of halite.

## General table of mineral basic structure types

Now that we have produced the three volumes of the structural classification of minerals, we might care to provide a bird's-eye view of the main mineral structure types. To do this we do not need to deal with all the structure types, but just select the main atomic arrangements of minerals that correspond to the so-called basic structure types, and display them in a table. Only the classified structure types are included in this general table, and not the tentatively classified.

According to Buerger (1947), when considering the relationships among structures, an assemblage of structures emerges: the derivatives, which differ very little in atomic arrangement from the basic structure. There are two kinds of derivatives: the distortion derivatives which result from a slight distortion of the basic structure, and the substitution derivatives which come from the replacement of certain chemical elements by others. Examples are Herzenbergite Sn°[S]° Pnma which is a distortion derivative of Halite Na°[Cl]°

Fm3m, and Matildite Ag°Bi°[S<sub>2</sub>]° P3m1 which is a substitution derivative of Halite. By slightly distorting or by changing the chemical elements one does not change the whole structure much; consequently the basic structure, its population, the distortion and substitution derivatives form a family, namely the assemblage of structures with more similarity.

The basic structure, according to Buerger, is the structure with higher symmetry. The same is stated by Megaw (1973), who gives the term aristotype to the simplest and most symmetrical member of the structure type. The population of a structure type consists of structures which have the same general structural formula and space group.

With this general table, one aims at an understanding of the variety of mineral structures and their relationships. With the study of the mineral families one intends to understand the changes in properties and symmetry resulting from slight distortions and chemical changes.

The general table will be found inside the back cover of the book.

# List of important typographical corrections in Vol. 2

- p. 2 Aikinite. Am.Mim. for Am.Min.
- p.4 Ardeite. Equivalent positions are wrong (they belong to Arsenoclasite)
- p.6 Berryite. Z=6 for Z=4.
- p.8 Carbocernaite. Alter Si to Sr.
- p.10 Clinochrysotile. Z=2 for Z=4.

(These errors have been pointed out by Dr. P. Bayliss and are here very gratefully acknowledged.)

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